

HOLDEN KB SERIES

Rodeo

OWNER HANDBOOK



Vehicle Identification Certificate

Owner's Name.....
Mr. Mrs. Miss

Selling
Dealer's
Stamp &
Signature.

Address.....

Town.....

State & Postcode.....

Model Name.....

Reg. No.....

V.I.N.

Date of Acquisition

Eng. No.

Refer to page 86 for Delivery Certificate.

Part No. 92016708

January 1981

GENERAL MOTORS-HOLDEN'S SALES PTY. LIMITED

New Vehicle Warranty

GENERAL MOTORS-HOLDEN'S SALES PTY. LTD. HEREBY WARRANTS THAT IT WILL MAKE GOOD, WITHOUT CHARGE, ANY DEFECT WHICH APPEARS IN THE VEHICLE IDENTIFIED IN THE VEHICLE IDENTIFICATION CERTIFICATE FOUND ON THE INSIDE OF THE FRONT COVER.

Provided

- the defect has been notified to an authorised GMH Dealer or Service Dealer:
 - before the vehicle has travelled a distance of 20,000 km, or;
 - within 12 months of the date of delivery of the vehicle to the first retail purchaser (or in the case of a Demonstrator vehicle within 12 months of the date when it was first placed into service by the Dealer)whichever comes first, and
 - the vehicle has been returned to an authorised GMH Dealer or Service Dealer
- And
- the Dealer has determined that the defect complained of *is* one of material or workmanship and *is not* caused by:
 - misuse or abuse of the vehicle such as by racing, rallying, overloading, etc. or by neglect
 - operation of the vehicle after it is known to be defective
 - accident or deliberate act
 - atmospheric fallout or flood, hail, salt, etc.
 - failure to carry out proper maintenance service
 - alteration or modification of the vehicle
 - the fitting of parts or accessories not marketed by GMH
 - any work carried out on the vehicle by someone other than an authorised GMH Dealer or Service Dealer.

BY THE DEALER (or as otherwise decided by GMH Sales) MAKING GOOD THE DEFECT BY REPAIR OR, AT THE OPTION OF GMH SALES, BY REPLACEMENT.

Excluded from this Warranty are

- defects in tyres or tubes (these being warranted by their manufacturers) and services such as engine tuning, brake adjustment, replacement of air and oil filters, etc. which are required as part of normal vehicle maintenance.

This Warranty applies only to vehicles operated in Australia and is given to the person who is entitled to possession of the vehicle whether as owner, lessee or otherwise and is given in addition to all rights conferred by law on that person.

Owners of vehicles operated outside Australia should consult their local dealer regarding the warranty applicable to their vehicles.

Notice to Customers

No GMH dealer or other person is authorised or permitted to give or make any statement assertion or undertaking in relation to the quality performance characteristics descriptions or fitness for any purpose of any GMH product or in connection with the supply of any GMH product, which is at variance with any written statement assertion or undertaking on any of these subjects given or made by General Motors-Holden's Limited or General Motors-Holden's Sales Pty. Ltd. in its published sales literature, and neither company accepts any liability for any such unauthorised action.

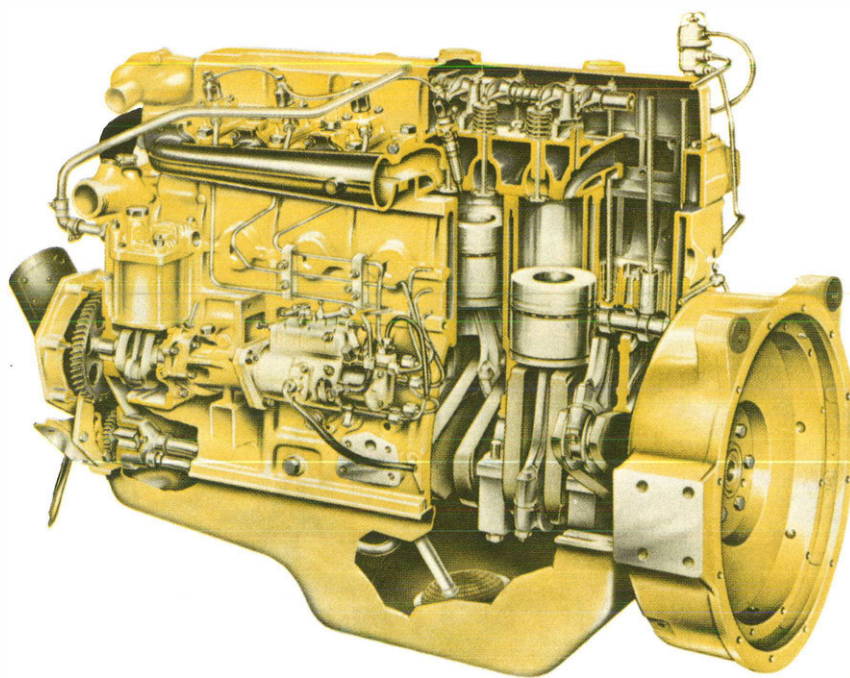
General Motors-Holden's Limited and General Motors-Holden's Sales Pty Ltd have franchised dealers in many parts of Australia for the sale of service parts and the provision of service to owners of GMH's products. Every endeavour is made to ensure that such dealers carry adequate stocks of service parts, and are equipped to provide satisfactory service, but neither General Motors-Holden's Ltd. nor General Motors-Holden's Sales Pty. Ltd. makes any promise that such parts or service facilities will be available, or available at any specific location or any particular time.

GMH Parts and Accessories Warranty

General Motors-Holden's Limited warrants in respect of GMH parts and accessories required as replacement parts, that it will make good by repair or at its option by replacement any defect occurring in any such GMH parts and accessories within 3 months from the date of acquisition or in the case of a GMH part or accessory which has been installed in a vehicle by a GMH Dealer or Service Dealer before such vehicle has travelled a distance of 6,500 kms from the date of installation, whichever first occurs.

KEEP IT CLEAN





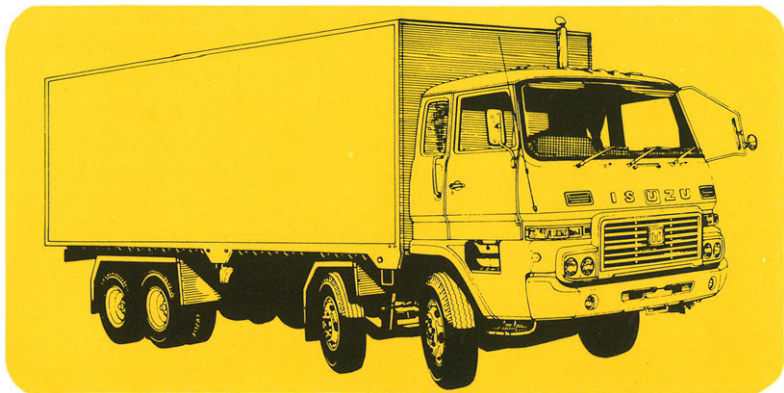
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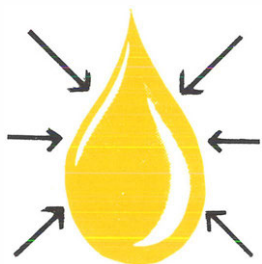
So the new vehicle has arrived—a diesel, smart and efficient-looking, bright and trim in its new paint! You will be anxious to give it a trial run and see how it pulls, but wait just a minute! First, please be patient and read the maker's handbook. Read it carefully, even if you have had a diesel equipped vehicle before. Make quite sure you haven't missed anything.

The diesel engine is quite simple and straightforward really, and it has a number of advantages which make it particularly suited for Road Vehicles. Most vehicle users nowadays are familiar enough with the petrol engine, and the diesel is no more complicated or difficult to understand than this. Yet there have been certain misconceptions about it, including the notion that the fuel injection pump is a “box of tricks”—it is not!

The diesel engine has neither carburettor nor electrical ignition system. The fuel injection equipment which takes their place is totally enclosed and weatherproof, and this in itself is one of the greatest advantages of the diesel—even if left out in all weathers, damp or rain will not affect starting.

Another false idea is that, because the diesel runs on fuel oil, it will operate on creosote, sump drainings or other waste products. It will not! Fuel oil, like petrol, is produced by the refineries to a definite specification, for use in high speed engines such as the one in your new vehicle. To use any fuel other than of the brands of the well-known companies is to ask for trouble. It is completely false economy, for consistent fuel quality and cleanliness are all-important in successful diesel operation.





THE GREAT ENEMY OF THE DIESEL ENGINE IS DIRT IN THE FUEL

This point deserves further explanation. The diesel is a hard-working engine that will give you long trouble-free service, as long as you keep the fuel really clean—not only free from large pieces of scale, sand or other dirt which the fuel filters or strainers will keep back, but free from dust, the fine dust which floats about in the air in dry weather. This fine dust is abrasive, and if it gets into the fuel it can cause rapid wear of the essential parts of the injection equipment. Your vehicle is fitted with a special filter which will prevent fine dust from passing into the pump—but let us explain why cleanliness is so important.

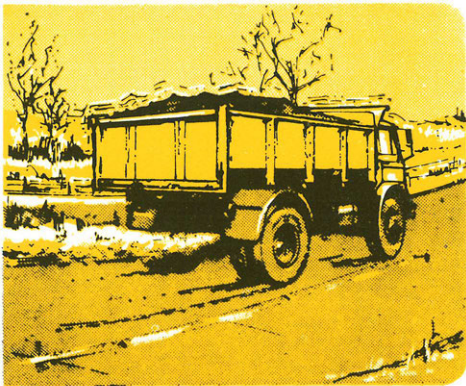
The fuel injection equipment comprises the injection pump itself, the injectors, and the filters. The pump and injectors are very carefully made, high-precision units, designed and built to perform a duty which is quite an arduous one. The pump is a sturdily built unit and has to supply the exact amount of fuel required to each cylinder—a droplet about the size of a pin's head for each firing stroke—and it operates at extremely high pressures. It has to inject hundreds of times a minute, and the amount of fuel must be under the instant control of the throttle or of the governor. The pump plungers are small and fit their housings perfectly—they have surface finishes and fits of the finest standard obtainable by modern engineering methods. Since the pump operates in fuel oil, the wear of these precision parts is negligible and the pump will continue to do its work perfectly, unless dirt gets in. When that happens you can imagine the effect of fine grit on those beautifully polished surfaces, when the fuel pressure is **something** like 38,584 kPa.

Now you will see how important it is to keep the fuel clean. Any abrasive dirt carried into the pump with the fuel will scuff and score the working parts—even the finest dust will damage the fine surfaces beyond repair. Worn components mean inefficient pumping, irregular deliveries to the various cylinders, bad running and poor starting.

The filter fitted between the fuel tank and the injection pump is provided to prevent this trouble. Gauze filters, however fine, are completely useless for diesel work, and a good filter is essential. The filter deserves a little special attention—we will mention it again later.

The injector nozzles, too, can suffer damage from dirt or dust in the fuel. The nozzles, which spray the fuel into the combustion chambers, operate against very high compression pressures, and, like the pump plungers, are high precision jobs. To enable the nozzle to break up the small charge of fuel into a finely atomised spray so that it will mix thoroughly with the air compressed in the chamber and give good combustion, the holes in the nozzle are very small. A needle valve fits in the nozzle and closes it except while injection of the fuel is actually taking place. The needle must fit the nozzle and valve seat perfectly, and it is held to the seat by heavy spring pressure. A very small amount of fine grit or abrasive dust in the fuel can cause sufficient scuffing or wear to upset the nozzle entirely, causing knocking, uneven running and smoky exhaust.

Again, clean fuel is the answer. See that the engine gets clean fuel, and you won't have any trouble.

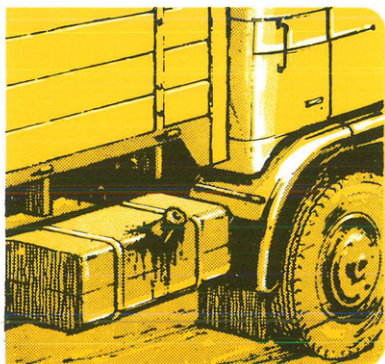
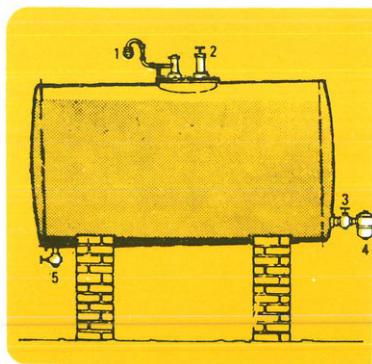


Now, what can you do to ensure that your fuel is clean, and stays clean? The only way that dirt can get into the fuel system of a vehicle in everyday use is through the fuel tank filler. It goes in with the fuel. So, see that storage is good and that you don't let any dirt get in when refuelling.

Storage tanks for fuel oil must be clean at the outset, and NOT galvanised. Fuel tanks must be covered so that dust and water cannot get in and scale will not form. The storage building should be clean and have a good floor. Take a pride in keeping the place spick and span—you will find it pays. If you are installing a new tank, see that it is inclined in a position similar to the one shown in the diagram below. Note the position of the sludge cock at the lower end, while the draw-off cock is at the opposite end. This enables water and dirty sediment which collect at the lower end to be drawn off periodically, leaving the supply as clean as possible. (After a delivery of fuel to the storage tank, always allow as long a time as practicable for settling before drawing off supplies.)

We recommend refuelling through a hose, the nozzle of which should be carefully wiped before use.

Should any fuel be spilt on tank or utensils when refuelling, wipe it up right away with a clean cotton rag, free from fluff. You see, fuel oil does not evaporate as petrol does and, if left, will gather dust and dirt from everywhere. Don't use cotton waste, the fluff from which will surely get into the fuel tank. And be careful where you put down the fuel tank cap—see that it does not pick up dust or grit. (This is perhaps the way that most dirt gets into the system.)



CLEANLINESS IS THE FIRST CARE WHEN REFUELLING

Some of these points may sound a little tedious—but start off right and take these sensible precautions every time—they soon become a habit and no trouble. You will be amply repaid in the service you get from your equipment.

Now, in spite of all your care, a certain amount of dirt will get into the fuel. Look at any shaft of sunlight and see the countless dust particles floating in the air. To cope with this fine dirt, a small amount of which is unavoidable, the diesel engine is provided with a special fuel filter, situated in the fuel line between the fuel tank and the injection pump. The filtering element was formerly of fine cotton cloth or felt (in some cases these may still be in use), but the most efficient elements today are of a specially prepared paper. The paper element filter is now standard equipment on most vehicles. In scientifically conducted tests it gave up to six times the life of the injection pump than that obtained with the old type of filter.

Periodically, as dirt collects, it becomes necessary to service the fuel filter. For detailed instructions of the correct procedure, refer to your Owner Manual. We can, however, give you a few “golden rules” about the job. It will be obvious that the cleaner the fuel is in the first place, the less chance there is of the filter becoming choked, it is not so much by solid impurities, as by waxy sludge which is present to a varying degree in all fuels, no matter how clean. The life of the filter



element depends therefore on the amount of fuel passed through it, and on the particular grade of fuel used—some fuels in some conditions are more prone to waxy deposits than others. Systematic checking and cleaning of the fuel system at the recommended intervals can prevent malfunction caused by plugged (blocked) or burnt injector nozzles and may obviate premature injector overhaul or replacements.

The factors which affect the performance of diesel engine injectors vary so much that it is impossible to quote a service interval that will be satisfactory for all conditions, but it is recommended that the intervals should not exceed 12 months or 20,000 kilometres.

Depending on the operating conditions, the cleanliness and quality of the fuel, and the condition of the engine, the injectors may require servicing at more frequent intervals.

FUEL TANKS

To reduce the accumulation of condensation (moisture) in fuel tanks, it is advisable to fill the tanks at the completion of each day's operation; this serves a two fold purpose in that it also allows for a daily check on fuel consumption.

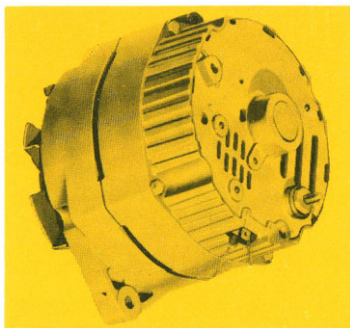
Condensation (water), if not drained off, can deteriorate tanks by forming rust, corrosion and sediment, therefore, it is essential to regularly remove drain plugs and drain off as much as possible of the accumulated foreign matter. A self-cleaning type fuel strainer is fitted to the fuel riser pipe; nevertheless, when re-fuelling, it is also good practice to use an effective nozzle filter. When drum fuel is used, always check drums for water prior to fitting the dispensing pump.

The servicing operation is a very simple one but remember, keep everything clean! Choose a time when the vehicle is under cover and there is very little dust flying about. On no account must dirt get to the "clean" side of the filter. Follow the instructions carefully, washing the parts in clean fuel oil, but do not use any cloths for wiping them. Remember that if any grit gets past the filter, it can go straight into the pump. Used paper elements cannot be cleaned—throw them away.

New elements are very cheap; make sure the special rubber sealing rings are fitted properly.

As for the pump itself, and the injector nozzles, they will continue to work properly for very long periods as long as they are supplied with clean suitable fuel. As long as they are working properly, leave them alone. The overhaul, maintenance and adjustment of injection pumps and nozzles is a specialised job, requiring special tools and test equipment, and should be carried out by a trained service engineer. Once again, the Owner Manual is your best guide. For any work on the injection equipment not described, or which you do not wish to undertake yourself, call in the nearest Service Agent. If you do not know his address, write direct to us and we will advise you, and also give you other information you may require.

Finally, may we repeat—keep the fuel clean and your fuel injection equipment will give you trouble-free service. If the fuel pump and nozzles do not appear to be working properly, call in the Service Engineer.



YOUR VEHICLE'S ELECTRICAL EQUIPMENT

Your new vehicle will be fitted with the usual electrical equipment: a battery, starter, alternator-regulator and lighting equipment etc.

A few elementary points about the electrical equipment may help. First, the same sound general principle—keep it clean! This will go a long way towards avoiding trouble. Read the Owner Manual carefully; it will tell you what should be done and when attention may be necessary.

A diesel engine takes quite a bit of turning over for starting because it has a very high cylinder compression, and this is one good reason for keeping the electrical equipment in good order.

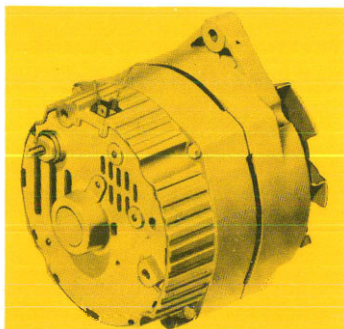
Let us begin with the alternator: it must be able to charge the battery properly or it will soon be “flat” as starting imposes a very heavy load on the battery.

Make sure that all electrical connections are clean and tight. A smear of petroleum jelly on the connections will prevent corrosion.

Make sure that fuel oil is not spilled over the alternator when adjustments are made to the fuel pump or it may cause an electrical breakdown. Remember, prevention is better than cure. Check the alternator from time to time to see that the armature commutator is free of oil.

The introduction of alternators, has brought about the necessity for you to ensure that these products are not damaged by reversing electrical connections.

As the battery negative lead is connected to earth, care must be taken to ensure that the battery is always connected correctly. This is known as the negative earth system.



Also it is most important to remove the battery leads when charging a battery, as it only requires a fraction of a second of reverse polarity to completely ruin semi-conductor equipment.

With the electric starter there is one very important point which must be emphasised—NEVER touch the starter button while the engine is running. This could cause considerable damage and put the starter out of commission.

Now for the battery, which has to supply the energy to start a cold engine that may have been standing a few days. At regular intervals remove the cover and carefully wipe from the top of the battery itself all moisture and the dust which it has picked up. Remove the

filler cap and examine the level of the liquid, which should be just sufficient to cover the tops of the plate separators. If the level in any of the cells is low, top up with distilled water only. Use a clean glass or plastic funnel—never a metal one, which will almost certainly cause damage by short circuit—or, better still, use a battery filler (as shown below). Never add acid, unless the battery has been tipped over and the contents spilt. If this has happened, refer to the Owner Manual.

When replacing the vent cap, see that the vent holes are clear. Should you lose a cap, get a proper replacement—never use a cork, as there must be provision for the escape of gas generated during charging.

CAUTION: Never expose the battery to open flame or electric spark—battery action generates hydrogen gas which is explosive.



Don't allow battery electrolyte (fluid) to contact skin, eyes, fabrics, or painted surfaces—electrolyte is a sulphuric acid solution which could cause serious personal injury or property damage. Wear eye protection when working with a battery. The terminals and connections to the battery should be cleaned and any corrosive deposit scraped off; a good smear of Vaseline or petroleum jelly will prevent further corrosion. See that the connections are tight.

CAUTION: When carrying out this work, remove rings, metal watchbands and other metal jewellery before jump starting or working around a battery, and be careful in using metal tools—if such metal should contact the positive battery terminal (or metal in contact with it) and any other metal on the vehicle, a short circuit may occur which could cause personal injury.

If an ammeter is fitted to show the output of the alternator, do not be misled by its reading. With all modern alternators an automatic integrated regulator control is fitted, which ensures that the battery gets the correct charge according to its condition. Immediately after starting, the ammeter will show a medium charge, and this will fall back gradually to a low reading as the engine warms up, if the battery is in good condition. A low reading ammeter should not, therefore, be taken to mean that the alternator is faulty or is not charging properly. It usually indicates that the battery is well charged. In former years, drivers regarded a high ammeter reading as a sign of efficient charging. Nowadays, it is necessary to get used to a reading which varies according to the requirements of the battery. A persistently high or zero reading indicates a condition which needs the attention of your Dealer.

Check lamps and wiring. Wiring should be run so that it is not liable to chafing or damage. Should any of the outer casing become worn or frayed, a wrapping of insulating tape will prevent short circuits.

At the same time, try to discover why the wiring has become damaged and remove the cause. The only parts of the actual wiring circuit (not the coverings) which should be exposed are the connections. Keep them clean, keep them tight, give a smear of

Vaseline occasionally and see that no metal part of the installation comes into contact with them.

If at any time the electrical wiring has to be replaced, do take care to use the same gauge of wire. To use an incorrect gauge will only cause trouble and reduce the efficiency of the circuit concerned. If at any time any electrical equipment is removed for any reason, see that the ends of the wires are wrapped in insulating tape to prevent any risk of short circuits.



UNDERBODY MAINTENANCE

The effects of salt and other corrosive materials used for ice and snow removal and dust control can result in accelerated rusting and deterioration of underbody components such as brake and fuel lines, frame, underbody floor, exhaust system and brackets. These corrosive effects, however, can be reduced by periodic flushing of the underbody with plain water. In addition to the periodic flushing mentioned above it is recommended that the complete underbody is thoroughly flushed prior to each Guardian Maintenance Inspection, paying particular attention to cleaning out underbody members where dirt and other foreign materials may have collected.

If desired, your dealer can perform this service for you.



INCORRECT IDLING AND MAX. SPEEDS

LOSS OF POWER-POOR CONSUMPTION

UNEVEN RUNNING-MISFIRING

EXCESSIVE EXHAUST

DIFFICULT STARTING

SYMPTOM



CAUSE



				1 ▶	1 No fuel
				2 ▶	2 Stop control
				3 ▶	3 Starting procedure
4 ▶		4 ▶		4 ▶	4 Air in system
5 ▶	5 ▶			5 ▶	5 Fuel restriction
				6 ▶	6 Fuel contamination
				7 ▶	7 Cranking speed
				8 ▶	8 Starting aid
	9 ▶	9 ▶	9 ▶	9 ▶	9 Injection timing
10 ▶	10 ▶			10 ▶	10 Feed pump
11 ▶	11 ▶			11 ▶	11 Blocked return pipe
12 ▶	12 ▶	12 ▶	12 ▶	12 ▶	12 Poor compression
	13 ▶			13 ▶	13 Exhaust system
14 ▶	14 ▶	14 ▶	14 ▶	14 ▶	14 Fuel atomisation
	15 ▶				15 Fuel tank vent
	16 ▶	16 ▶		16 ▶	16 Firing order
		17 ▶			47 HP pipe restriction
18 ▶	18 ▶	18 ▶		18 ▶	18 HP leaks
	19 ▶				19 LP leaks
20 ▶					20 Idling speed incorrect
21 ▶	21 ▶				21 Max speed incorrect
22 ▶	22 ▶				22 Accelerator linkage
		23 ▶			23 Engine mounting
		24 ▶			24 Vibration
	25 ▶				25 Overloading
	26 ▶				26 Brakes
		27 ▶			27 F I pump mounting
28 ▶	28 ▶	28 ▶	28 ▶	28 ▶	28 F I pump

FUEL INJECTION EQUIPMENT

FAULT DIAGNOSIS

CHECK

- 1 Fuel level
- 2 In run position and linkage free
- 3 Is it correct
- 4 That system is vented and all joints and unions air tight
- 5 Filters and pipes clear
- 6 That fuel is free of water, dirt, ice and wax
- 7 Correct Lub. oil. Battery, starter and cable connections
- 8 Correct functioning. Fuel supply and electrical connections
- 9 Pump to engine timing
- 10 Pressure
- 11 DPA back leak, return to tank and filter vents are free
- 12 Cyl. comp. Air intake clear. Injector seats. Valve clearances & timing
- 13 Unrestricted
- 14 Injectors – type, setting, condition, sealing and evenly tightened down
- 15 Vent unrestricted
- 16 HP pipes fitted in correct order
- 17 HP pipe bores not kinked or reduced at nipples
- 18 HP pipe joint tightness
- 19 Fuel pipes for leaks
- 20 Engine idling speed setting
- 21 Engine maximum no load setting
- 22 Lever loose on pump, reaches stops. Linkage wear. Pedal stop setting
- 23 Mountings are tight
- 24 Vibration not transmitted from elsewhere
- 25 Vehicle payload
- 26 Brakes not binding
- 27 F I pump drive and mounting bolts tight
- 28 **If all else fails remove F I pump and send for specialist check**



Preface

This manual has been prepared to acquaint you with the operation and maintenance of your Holden Rodeo KB series, and to provide important safety information. We urge you to read it carefully and follow the recommendations to help assure the most enjoyable and trouble-free operation of your vehicle.

When it comes to service, remember that your GMH dealer knows your vehicle best and is interested in your complete satisfaction.

We would like to take this opportunity to thank you for choosing a Holden product—and assure you of our continuing interest in your motoring pleasure and satisfaction.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication.

The right is reserved to make changes at any time without notice.

General Motors-Holden's Limited



For proper maintenance of your vehicle use only General Motors parts, which are identified by one of these trademarks. When it comes to servicing, remember that a GMH Dealer has the trained personnel and specialised equipment to correctly service your vehicle.

All illustrations and specifications contained in this handbook are based on the latest product information available at time of publication approval. The right is reserved to make changes, at any time, without notice, in prices, colours, materials, equipment, specifications and models, and to discontinue models. Check with Your Holden Dealer for complete information.

HOLDEN RODEO KB SERIES

OWNER'S AND DRIVER'S MANUAL

This manual should be considered a permanent part of the vehicle, and must remain with the vehicle at time of resale.

Table of Contents

Section	Page
Important Information on Vehicle Loading.	1
Before Driving Your Vehicle.	3
Seat Belts	6
Running-in a New Vehicle.	9
Starting and Operating	10
Controls.	10
Floor Controls.	18
Instrument Panel	21
Others	26
In Case of Emergency	30
Appearance Care	38
Emission Control Systems	39
Safety Checks	45
Service and Maintenance	48
Owner Relations.	66
Dealers.	67
Recommended Lubricants	74
Maintenance Schedule	75
Specification and Service Station Information.	84
Delivery Certificate	86

Important Information on Vehicle Loading

OVERLOADING

SAFETY CAUTION:

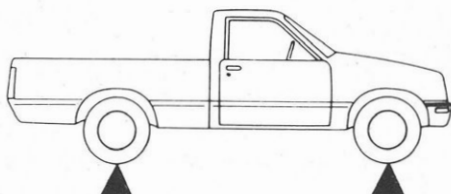
The components of your Holden Rodeo are designed to provide satisfactory service if the truck is not loaded in excess of either the Gross Vehicle Weight Rating (GVWR) or the maximum Front and Rear Gross Axle Weight Ratings (GAWR's) specified in the drawing below. (See Fig. 1.)

LOADED-MAXIMUM GVWR

KB 26	Petrol Engine LWB Chassis/Cab—Pickup
KBD26	Diesel Engine LWB Chassis/Cab—Pickup 2350 kg (5182 lbs)

KB26W	(Double Cab) Petrol Engine LWB Chassis/Cab Pickup
KBD26W	(Double Cab) Diesel Engine LWB Chassis/Cab Pickup 2100 kg (4631 lbs)

KB41	Petrol Engine SWB 4WD Chassis/Cab Pickup
	KBD41 Diesel Engine 2350 kg (5182 lbs)
	SWB 4WD Chassis/Cab Pickup 2100 kg (4631 lbs)
	In Rough Terrain Use



	REAR GAWR	FRONT GAWR
KB26, KBD26	1500 kg (3308 lbs)	850 kg (1874 lbs)
KB26W, KBD26W	1500 kg (3308 lbs)	850 kg (1874 lbs)
KB41, KBD41	1500 kg (3308 lbs)	850 kg (1874 lbs)

Fig. 1

Overloading can create serious potential safety hazards and can also shorten the service life of your truck. Your local GMH dealer can advise you concerning proper loading conditions of your Rodeo.

GVWR (GROSS VEHICLE WEIGHT RATING)

“Gross Vehicle Weight Rating” means the maximum load carrying capacity of the truck, including the truck itself, all items added to the truck after it has left the factory such as bodies, winches, booms, etc., the driver, all occupants, and everything that is loaded into (or onto) the truck. The GVW rating represents the weight of that complete vehicle, taking into consideration the engine, transmission, frame, spring and tyre capabilities.

MAXIMUM FRONT AND REAR AXLE WEIGHTS

The weight of the payload must be properly distributed over both the front and rear axles, although not necessarily evenly. The front or rear “Gross Axle Weight Rating” means the maximum weight that the front or rear axle can carry. Actual front and rear end weights at the ground can only be determined by weighing the vehicle. This can be accomplished at highway weigh stations, or other such commercial facilities. For assistance in this regard, consult your GMH dealer. Care should also be exercised to see that the payload is distributed on both sides of the centreline of the truck as equally as possible.

TYRES

It is important that the tyres on your truck are of the proper size, and be properly inflated, for the load which you are carrying. It is important to avoid over-inflation as well as under-inflation. The “Tyre Inflation Table” in the Service and Maintenance section of this manual provides inflation pressure information.

CAUTION: When using your vehicle to transport luggage or other cargo, it is recommended that the articles be secured in place. This precaution will help prevent such items from becoming projectiles in the event of an accident.

Before Driving your Vehicle

DRIVER CHECKLIST

Before Entering Vehicle

1. See that windows, mirrors and lights are clean.
2. Visually note inflation condition of tyres.
3. Check that area to rear is clear if about to back up.
4. Check that all lights work.
5. Look for fluid leaks.

Before Driving Off

1. Lock all doors.
2. Adjust the seat.
3. Adjust inside and outside mirrors.
4. Fasten seat belts.
5. Check that warning lights work as key is turned to "ON".
6. Check all gauges.
7. Release parking brake and see that "Brake" light turns off.
8. Be sure you understand your vehicle and how to operate it safely.

OPERATION OF CONTROL

Keys

The code number of each key is stamped on the key. Record the key numbers and keep the numbers in a safe place such as your wallet, NOT IN THE VEHICLE.

In the event the original keys are lost, duplicates can be made by your dealer using the key code information.

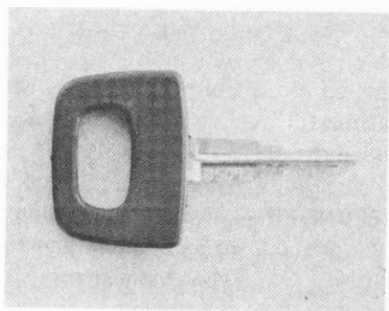


Fig. 2

Door Locks

Doors may be locked from outside the vehicle by inserting the ignition key into the door key lock and turning. To unlock, turn in the counterclockwise direction for the left door; clockwise for the right door. Reverse direction to lock. (See Fig. 3.) To lock doors from inside the vehicle, push lock button down. To open the door from inside, unlock the knob and pull the inside handle.

NOTE: As a standard safety feature, the doors have overriding door locks. When the lock is locked, the door latch mechanism is inoperative, preventing inadvertent opening of the door by movement of the inside handle. (See Fig. 4.)

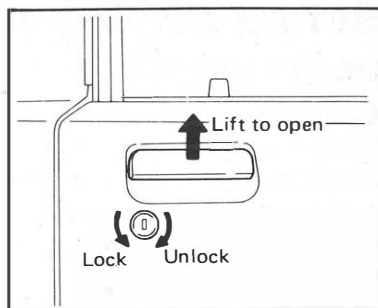


Fig. 3

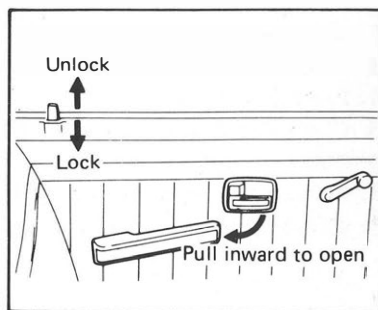


Fig. 4

The doors can also be locked from outside without using the ignition key by pushing in on the lock knob and closing the door with the door outside handle pulled.

NOTE: The KB series equipped with pickup body, have a lockable fuel filler door which can be unlocked, with the ignition key. After refuelling check to be sure the fuel filler cap is locked properly. (See Fig. 5.)

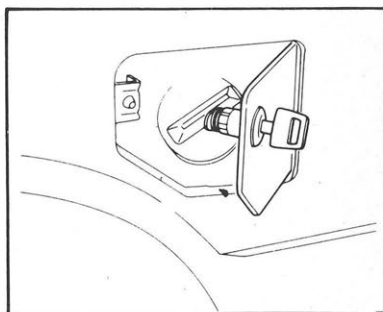


Fig. 5

Seats

The entire seat assembly can be moved forward or rearward for the most comfortable position. Pull sideways on the lever, located at the front right end (or left end) of the seat, to release the seat adjuster lock so the seat assembly can be moved forward or rearward as desired. (See Fig. 6.)

CAUTION: Do not adjust a manually operated driver's seat while the vehicle is moving—the seat could move unexpectedly, causing loss of control.

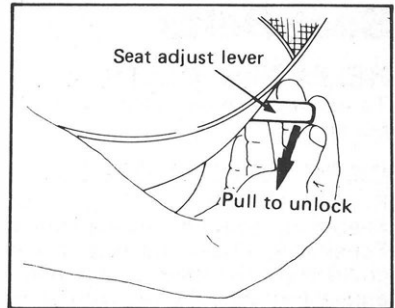


Fig. 6

Inside Rearview Mirror

To raise or lower, grasp mirror and exert sufficient pressure by pushing or pulling to move up or down.

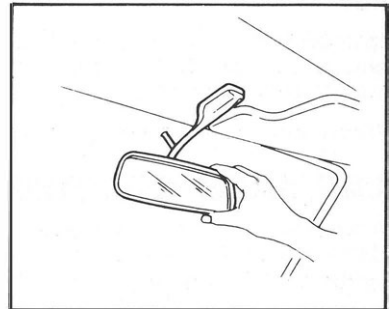


Fig. 7-1

Glare Proofed Internal Rear View Mirror (Option)

Day time : Drive with lever pushed down.

At night : Drive with lever up, so that the glare proofed mirror protects your eyes against light from vehicles behind.

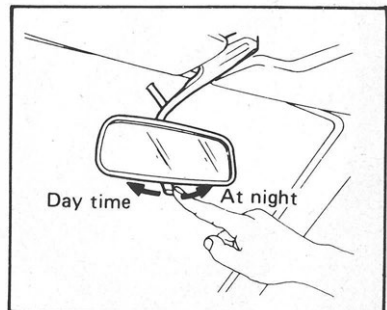


Fig. 7-2

Seat Belts

RELEASING BELTS

To release all belts, simply depress the release button located in the centre of the buckle.

CARE OF SEAT BELTS

Keep the belts clean and dry. Clean with a mild soap solution and lukewarm water. Keep sharp edges and damaging objects away from the belts.

Periodically, inspect the belts, buckles and anchorage points. Damage or fraying that could lessen the effectiveness of the system should be eliminated by replacing the belt assemblies. Do not bleach or dye the belts since this can cause severe loss of strength as also will contamination of the webbing with polishes, oils or chemicals—particularly battery acid.

USING SEAT BELTS

Various road laws require the wearing of seat belts. It is important that the habit of using these should be developed by yourself and others using the vehicle.

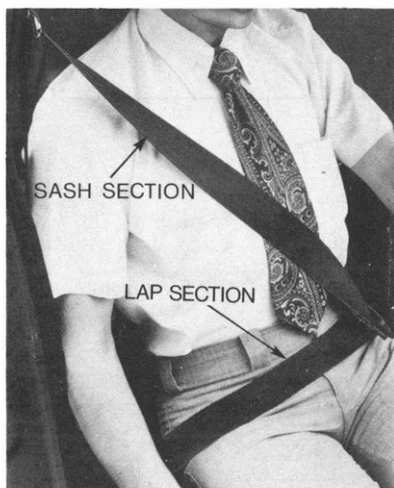
The adjustment and operating instructions are detailed in this Section together with the Seat Adjustment it being important that both positions be comfortable in order that the driver may devote his entire attention to the job of driving and observing the road.

IMPORTANT: Don't use belts that are twisted—untwist them before making any adjustments and be sure that they contour around the body comfortably when adjustments are complete.

(Refer to the following pages for important instructions.)

LAP/SASH COMBINATION BELT

A firm, low position across the pelvis by the lap section of the Lap/Sash Combination Belt is essential in order that the force exerted by the Lap Belt in a collision may be spread over the strong hip bone structure and not across the soft abdominal area.



EMERGENCY LOCKING RETRACTOR TYPE

This type of seat belt allows the wearer to move bodily while the seat belt is fastened. It is also dual sensitive.

The first way the locking mechanism is activated is by sudden changes of vehicle speed or vehicle direction, as in the case of firm brake application or vehicle impact during an accident. This phase of the retractor mechanism's operation can be tested by allowing the body to be restrained only by the belt during firm application of the vehicle brakes, at between 2-5 km/h (brisk walking speed) under safe conditions.

The belt should lock immediately, stopping all belt movement. The second way the locking mechanism is activated is by a sudden extension of the belt from the retractor housing. This phase of the retractor mechanism's operation can be tested by holding the belt tightly and giving it a sudden firm jerk. The retractor mechanism should lock immediately, stopping all belt movement.

These checks should be carried out regularly.

WARNING: No modifications or additions should be made by the user which will either prevent the seat belt adjusting devices from operating to remove slack, or prevent the seat belt assembly from being adjusted to remove slack.

TONGUE RESTRICTOR

This belt system incorporates a tongue restrictor which can be moved along the belt to locate and hold the tongue in any desired position.

WARNING: The positioning of the tongue restrictor must never interfere with or stop the belt from fully retracting.

BELT ADJUSTMENT

1. Adopt a satisfactory seating position.
2. Bring the metal tongue across the body and snap home the Tongue into the Buckle.
3. After fastening, settle the belt by running a hand under the belt, starting at the outer hip area, then across to the tongue and up the sash section. This will feed back unwanted belt length to the retractor.
4. Finally check the fit and adjustment.

LAP TYPE BELTS

BELT ADJUSTMENT

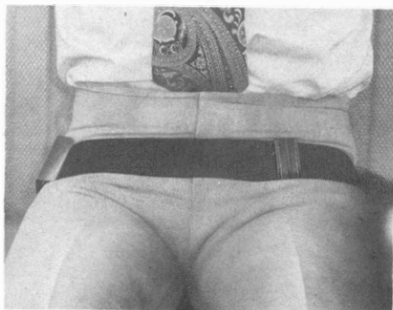
1. Adopt a satisfactory seating position.
2. Bring the Tongue Adjuster across the body and snap home the Tongue into the Buckle.
3. Adjust the belt to obtain a firm fit. A firm low position across the pelvis is essential in order that the force exerted by the lap belt in a collision may be spread over the strong hip bone structure and not across the soft abdominal area.

To Lengthen—Tilt the Tongue Adjuster and pull the belt to the right of the finger grip bar.

To Shorten—Tilt the Tongue Adjuster and use the serrated Finger Grip Bar to pull the belt through the Tongue Adjuster.

BELT STOWAGE

When not in use these belts should be kept with the tongue latched into the appropriate buckle.



AUSTRALIAN DESIGN RULES: WARNINGS

Seat belts are designed to bear upon the bony structure of the body, and should be worn low across the front of the pelvis, or the pelvis, chest and shoulders, as applicable; wearing the lap section of the belt across the abdominal area must be avoided.

Seat belts should be adjusted as firmly as possible, consistent with comfort, to provide the protection for which they have been designed. A slack belt will greatly reduce the protection afforded to the wearer.

Care should be taken to avoid contamination of the webbing with polishes, oils and chemicals, and particularly battery acid. Cleaning may safely be carried out using mild soap and water. The belt should be replaced if webbing becomes frayed, contaminated or damaged.

It is essential to replace the entire assembly after it has been worn in a severe impact even if damage to the assembly is not obvious.

Belts should not be worn with straps twisted.

Each seat belt assembly must only be used by one occupant; it is dangerous to put a belt around a child being carried on the occupant's lap.

No modifications or additions should be made by the user which will either prevent the seat belt adjusting devices from operating to remove slack, or prevent the seat belt assembly from being adjusted to remove slack.

The positioning of the tongue restrictor must never interfere with or stop the belt from fully retracting.

Running in a New Vehicle

Future performance and service life of your vehicle are under the direct influence of care and treatment that your vehicle will receive during the initial running in period. It is therefore, recommended that, during the first 1,000 km (600 miles) of break-in period, the following few simple precautions be carefully observed.

- It is recommended that your speed during the first 1,000 km (600 miles) of break-in period be confined to a maximum of 100 km/h (60 miles); petrol engine and 85 km/h (50 mph); diesel engine.
- Avoid engine racing, abrupt starting and needless hard stops, except in an emergency.
- Always let the engine idle until it reaches normal operating temperature.
- Avoid overloading.
- Confine your speed to the following recommendations.

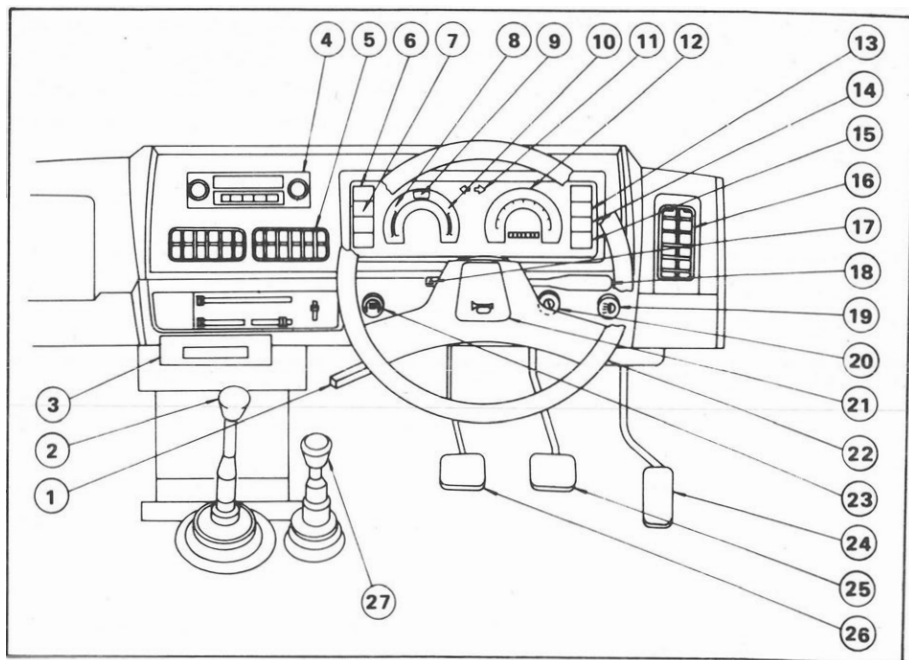
4 x 2 Models Max. allowable speed during break-in period

First 1,000 km (600 miles)	Model	1st gear	2nd gear	3rd gear	4th gear
	Model with Petrol Engine	25 km/h (15 mph)	40 km/h (25 mph)	70 km/h (45 mph)	100 km/h (60 mph)
	Model with Diesel Engine	20 km/h (10 mph)	30 km/h (15 mph)	50 km/h (30 mph)	85 km/h (50 mph)

4 x 4 Models

First 1,000 km (600 miles)	Model	Transfer Position	1st gear	2nd gear	3rd gear	4th gear
	Model with Petrol Engine	2H, 4H	25 km/h (15 mph)	40 km/h (25 mph)	70 km/h (45 mph)	100 km/h (60 mph)
		4L	13 km/h (8 mph)	20 km/h (10 mph)	35 km/h (20 mph)	55 km/h (35 mph)
	Model with Diesel Engine	2H, 4H	20 km/h (10 mph)	30 km/h (15 mph)	50 km/h (30 mph)	85 km/h (50 mph)
		4L	10 km/h (5 mph)	15 km/h (10 mph)	25 km/h (15 mph)	45 km/h (30 mph)

Starting and Operating Controls



1. Parking brake lever
2. Transmission gearshift lever
3. Ash tray
4. Radio (optional equipment)
5. Centre ventilator grille
6. 4WD indicator light (4 x 4 model only)
7. Glow indicator light (D)
8. Temperature gauge
9. High beam indicator light
10. Fuel gauge
11. Turn signal indicator light
12. Speedometer and Odometer
13. Oil pressure indicator light
14. Generator indicator light
15. Parking brake indicator

16. Side ventilator grille
17. Four-way Hazard warning flasher switch
18. Turn signal switch, Windshield wiper and washer switch
19. Light switch
20. Starter switch
21. Horn button
22. Steering wheel
23. Idling control button (D) or Choke control button (P)
24. Accelerator pedal
25. Brake pedal
26. Clutch pedal
27. Transfer gearshift lever (4 x 4 model only)

(D) Indicates Diesel engine only

(P) Indicates Petrol engine only

All others for Diesel and Petrol engines

STARTER SWITCH

The starter switch has five positions as shown in Fig. 11.

LOCK : The key may be inserted and removed only when the switch is in this position.

OFF : The engine will stop with switch in this position.

ACC : With the switch to this position, electrical circuit for accessories are energized.

ON : Switch in this position for driving.

START : Moving the key into this position will start the engine. Releasing the key will allow it to return to **ON** position.

NOTE: Do not keep the starter engaged for more than 15 seconds (Petrol Engine) or 30 seconds (Diesel Engine).

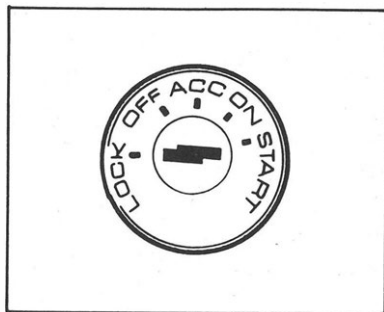


Fig. 11

WHEN LEAVING YOUR VEHICLE UNATTENDED

- Place transmission selector in Reverse.
- Turn key to LOCK position.
- Check that light switch and turn signal switch are turned off.
- Set parking brake.
- Remove key.
- Lock all doors.

HEADLIGHT BEAM SWITCH LEVER (COMBINATION TURN SIGNAL SWITCH LEVER) AND INDICATOR LIGHT

The hand operated switch located on the right side of the steering column, is used to change the headlamp beam from high to low or low to high. Each time the lever is moved, the light beam changes. A headlamp beam indicator, on the face of the instrument panel, lights up when the headlamps are on high beam.

Move the lever rearward (toward the steering wheel) for low beam and forward (away from the steering wheel) for high beam. (See Fig. 12-1.)

PASSING SIGNAL

To operate the high beam regardless of the light switch position, move the lever toward the steering wheel beyond the low beam position. The lever returns to the low beam position when released.

To give the traffic ahead a signal of overtaking, operate the lever repeatedly.

The headlamp circuits are protected by the automatic re-set circuit breaker.

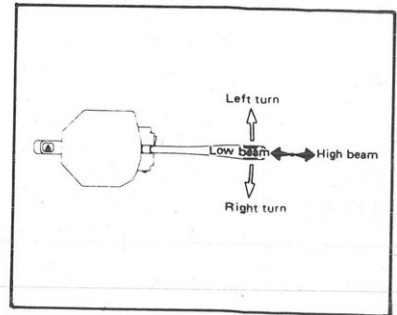


Fig. 12-1

TURN SIGNALS

The lever which controls the turn signal switch (combination headlight beam control switch lever) is located on the right side of the steering column immediately under the steering wheel. The lever is moved upward to signal a left turn and downward to signal a right turn. Lamps on the front and rear of the vehicle transmit this signal to other motorists and pedestrians. (See Fig. 12-1.)

In a normal turning situation such as turning a corner, the turn signal is cancelled automatically after the turn is completed. However, in some driving manoeuvres, such as changing lanes on an expressway, the steering wheel is not turned back sufficiently after completing the turn to automatically cancel the turn signal. In such manoeuvres the driver should return the lever to the neutral or cancelled position when the turn is completed.

A green light on the centre part of the instrument panel flashes to indicate proper operation of the right and left turn signal lamps. If the indicator lamp remains on and does not flash, check for a defective signal lamp bulb. If the indicator fails to light when the lever is moved, check the fuse and indicator bulb.

Lane Change Signal

For convenience, such as changing lanes, you can flash the turn signal by moving the lever part way (to the first stop) and holding it there. The lever will return to the horizontal when you release it.

STARTING AND DRIVING PRECAUTIONS

Shifting Precautions

CAUTION: On a diesel engine model, a caution label-speed range is attached to the front part of door inside panel on the driver side. For best results, it is strongly advisable to confine your speed in each gear to the limit recommended in the caution label-speed range.

- Always start in low gear, avoid racing the engine.
- Shift to next lowest gear for extremely hard pulls at low road speed.
- Do not over speed engine when shifting down to next lower gear.
- Use third gear at slow speeds (less than 50 km/h) when driving in stop-and-go traffic for improved vehicle performance during acceleration and when descending steep grades.
- Never shift into reverse gear until vehicle is completely stopped.
- Confine your speed to the following recommendations.
- For normal accelerations, follow the following steps.
(4 x 2 Models)

Shift into second gear at about 15 km/h, into third gear at about 30 km/h and into top gear at about 50 km/h.

(4 x 4 Models)

In 2H or 4H, shift into second gear at about 15 km/h, into third gear at about 30 km/h and into top gear at about 50 km/h.

In 4L, shift into second gear at about 8 km/h, into third gear at about 16 km/h and into top gear at about 27 km/h.

4 x 2 Models Maximum Allowable Speed in Gear:

Transmission Gear Position	Petrol Engine	Diesel Engine
1st gear	30 km/h	25 km/h
2nd gear	50 km/h	40 km/h
3rd gear	90 km/h	75 km/h

4 x 4 Models

Transmission Gear Position	Transfer Position	Petrol Engine	Diesel Engine
1st gear	2H, 4H	30 km/h	25 km/h
	4L	16 km/h	13 km/h
2nd gear	2H, 4H	50 km/h	40 km/h
	4L	26 km/h	22 km/h
3rd gear	2H, 4H	90 km/h	75 km/h
	4L	48 km/h	40 km/h

Clutch Operation

- Do not ride clutch pedal; this produces a partly disengaged condition that will result in damage to your clutch.
- When stopped on an upgrade, do not hold truck with engine. Use service brake.

STARTING THE ENGINE

1. Apply the parking brake.
2. Place transmission in neutral and hold clutch pedal to the floor throughout the starting procedure. (Select the proper gear position before releasing the clutch pedal. See "Starting and Driving Precautions".)
3. Depress accelerator pedal and activate starter as outlined below for different conditions.
4. Start engine as outlined below for different conditions.

Normal Weather—Above about 0°C (Petrol Engine)

1. With the key turn the starter switch clockwise, checking to see if the oil pressure indicator light and generator indicator light turn on.
2. Crank the engine by turning the starter switch fully clockwise. Release the key as soon as the engine starts. The starter switch will return automatically to "ON" position.
3. When the engine starts, depress the accelerator pedal part way down and check to be sure that the oil pressure indicator light and generator indicator light go out.

(Diesel Engine)

1. Turn the starter key to ON position.
Checking to see if the oil pressure indicator light, generator indicator light and filter indicator light turn on.
The glow indicator light will light and then go off in about 0.3 seconds if the engine is warm, or in about 3.5 seconds if the engine is cold.
2. As soon as the glow indicator light has gone off, fully depress the accelerator pedal and clutch pedal to start the engine.
3. Crank the engine by turning the starter switch fully clockwise. Release the key as soon as the engine starts. The starter switch will return automatically to ON position.
4. When the engine starts, depress the accelerator pedal part way down and check to be sure that the oil pressure indicator light and generator indicator light go out.
If necessary to achieve a smooth idle, turn the idling control button to clockwise until the engine reaches normal operating temperature. Turn the idling control button to home position after the engine has thoroughly warmed up.

Cold Weather—Below about 0°C, or After Vehicle Has Been Standing Idle For Several Days.

(Petrol Engine)

1. Pump the accelerator pedal 2 to 3 times and release it.
2. Depress the clutch pedal all the way to floor, hold and crank the engine by turning the starter switch fully clockwise.
3. When the engine starts, allow it to run at fast idle setting in NEUTRAL for approximately 20 to 30 seconds to facilitate warming-up.

NOTE: If the engine does not start due to carburettor flooding, continue to operate the starting motor with the accelerator pedal depressed to floor.

(Diesel Engine)

To start, follow the steps applied for starting cold engine under warm weather.

Hot Engine

1. Depress accelerator pedal slowly, and hold it to floor, turn the starter switch clockwise—release when engine starts.
2. After starting the engine, release accelerator pedal.

If the Engine Fails to Start with Initial Cranking

IMPORTANT: Do not keep the starter engaged for more than 15 seconds (Petrol Engine) or 30 seconds (Diesel Engine) at a time. Wait 30 seconds and try again.

NOTE: If the starting motor has been operated continuously but the engine did not start, allow 30 seconds before attempting to restart. If the engine fails to start with repeated cranking, check fuel system and electrical system.

STOPPING THE ENGINE

Turn the starter switch to OFF position.

NOTE OIL PRESSURE INDICATOR LIGHT AND/OR GENERATOR INDICATOR LIGHT

Generator light should be off unless engine is idling slowly. The oil pressure indicator light should go out. Be certain light is off before continuing; if still on, stop engine and determine fault.

CHECK TEMPERATURE GAUGE

If the needle moves to the "H" hot end of the gauge, stop the engine until the cause of overheating is determined.

MANUAL TRANSMISSION

REMINDER: Before descending a steep or long grade, down a mountain or hillside, reduce speed and shift into a lower gear. Under such conditions, use the brakes sparingly to prevent them from overheating which reduces brake effectiveness.

GEARSHIFT LEVER

The transmission has fully-synchronised four forward speeds. The gearshift pattern is provided on the left side face of the steering column behind the steering wheel. (On floor shift control model, the gearshift pattern is provided on the shift lever knob.) The back-up lights turn on when shifted into reverse gear. (See Fig. 13 & 14.)

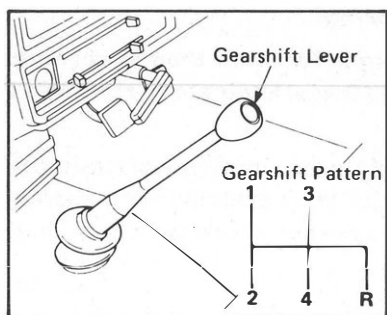


Fig. 13
Floor Shift

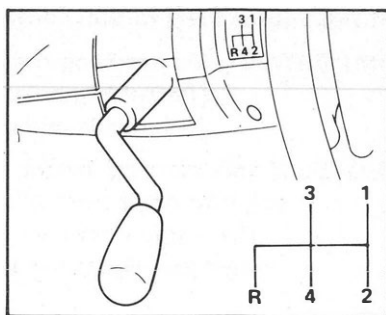


Fig. 14
Column Shift

PART TIME FOUR WHEEL DRIVE (4 x 4 MODELS)

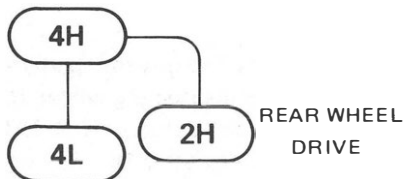
NOTICE: To properly run-in front wheel axle components on conventional (Part-time) four wheel drive models, drive the vehicle the initial 300 km (200 miles) in rear wheel drive (2H) position.

Transfer Case Operation

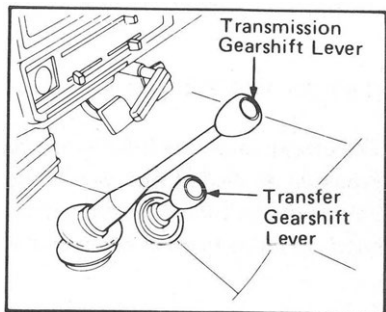
The transfer case for conventional (Part-time) four wheel drive vehicles provides that the driver may select two wheel or four wheel drive at any time.

Shift lever positions as shown on the shift lever knob are:

ALL WHEEL
DRIVE (HIGH)



ALL WHEEL
DRIVE (LOW)



CONVENTIONAL (PART TIME) SHIFT PATTERN

PART-TIME 4 X 4

TRANSFER CASE SHIFT CONTROL

2H — HIGH RANGE — NORMAL TWO WHEEL DRIVE

4H — HIGH RANGE — ALL FOUR WHEELS DRIVING

4L — LOW RANGE — ALL FOUR WHEELS DRIVING

4L AND 4H FOR LOW TRACTION CONDITION ONLY (MUD, SNOW OR SAND). NOT RECOMMENDED FOR DRY PAVEMENT.

THE TYRES SHOULD BE INFLATED TO RECOMMENDED PRESSURE WHEN USING FOUR WHEEL DRIVE. IT IS NOT ADVISABLE TO USE DIFFERENT SIZE TYRES ON THE FRONT AND REAR AS IT CAN CAUSE NOT ONLY PREMATURE WEAR OF TYRE TREAD BUT ALSO CAUSES TROUBLES DUE TO UNDUE STRESSES IMPOSED ON THE DRIVE TRAIN.

With free wheeling hubs, fitted to the vehicles do not use All Wheel Drive (4L) or (4H) unless hubs are in the "LOCK" position as shown in Fig. 16.

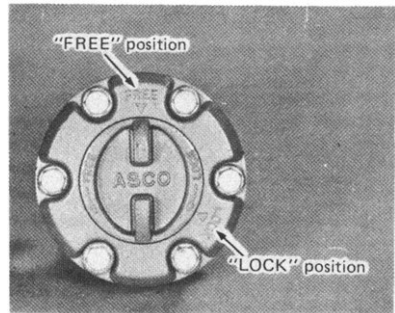


Fig. 16

- CAUTION:**
1. The transfer shift lever must be shifted to 2H before unlocking hubs.
 2. Free wheeling hubs must be set in "LOCK" position, when the lever is shifted to 4L.
(See the caution label attached to the door inner panel.)

3. To properly break-in front wheel drive axle components, drive the vehicle for the initial 300 km in rear wheel drive (2H) position with free wheeling hubs engaged in "LOCK" position.

After this initial 300 km, drive the vehicle each month as above for a minimum of 20 km (10 miles) to ensure proper lubrication.

SHIFTING PROCEDURE FOR CONVENTIONAL (PART-TIME) FOUR WHEEL DRIVE

NOTE: The transfer case shift lever is placed in 2H (2 wheel drive High Range) position for normal driving.

VEHICLE MOVING

The transfer case can be shifted without depressing the clutch from 2H to 4H or 4H to 2H.

- NOTE:**
1. When shifting into 2H from 4H, there may be a little time lag until the sliding sleeve moves for engagement.
 2. Never shift from 4H to 4L or 4L to 4H while the vehicle is moving.

TO SHIFT TRANSFER CASE FROM	TO	PROCEDURE
2H (Rear Wheel Drive)	4H (All Wheel Drive, High Range) (Use 4H on low traction road surface only)	1. May be made at any speed, forward or reverse. 2. Move lever fully into position.
4H (All Wheel Drive, High Range)	2H (Rear Wheel Drive)	1. May be made at any speed, forward or reverse. 2. Move lever fully into position. 3. Momentarily release or slightly depress accelerator pedal to relieve sliding sleeve movement.

VEHICLE STATIONARY

NOTE: The transmission shift lever is placed in "Neutral" position if engine is running.

TO SHIFT TRANSFER CASE FROM	TO	PROCEDURE
Any Position	2H or 4H	1. Move lever fully into position.
Any Position	4L (All Wheel Drive, Low Range) (Used for low traction road surface only).	1. Move lever fully into position.

Instrument Panel—Instruments and Controls

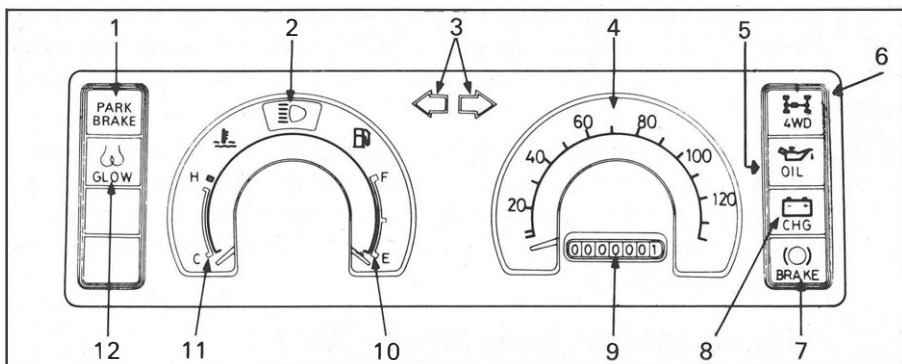


Fig. 17

- | | |
|---|----------------------------------|
| 1. Park Brake indicator | 7. Brake indicator |
| 2. High beam indicator | 8. Generator charge indicator |
| 3. Turn signal indicators | 9. Odometer |
| 4. Speedometer | 10. Fuel gauge |
| 5. Oil pressure indicator | 11. Temperature gauge |
| 6. 4WD indicator
(4 x 4 models only) | 12. Glow indicator (Diesel only) |

SPEEDOMETER

The speedometer hand indicates vehicle speed in kilometres per hour.

Odometer — The group of seven figures in the speedometer upper centre section indicates the accumulated kilometres travelled.



FUEL GAUGE

The fuel gauge is wired through the ignition switch and indicates the level of fuel in the tank when the ignition switch is turned on.



OIL PRESSURE INDICATOR LIGHT

This unit indicates oil pressure in the engine lubrication system. Proper indicator interpretation is given under "Starting the Engine".



GENERATOR INDICATOR LIGHT

The generator indicator light indicates generator operation. Normal operation is with the light off. Refer to "Starting the Engine" for complete indicator interpretation.



BRAKE INDICATOR LIGHT

The brake indicator light indicates the level of brake fluid in the reservoirs. With the starter switch in "ON" position, the bulb lights up when the brake fluid in the reservoirs is lower than the specified level, cautioning the driver that brake fluid needs to be replenished.

NOTE: As a check on the condition of the Generator, Oil Pressure and Brake Indicator Lights, the bulbs will light up when the starter switch is in "ON" position but before the engine is started, and while the engine is being cranked, and then should go out as engine speed is increased.



PARKING BRAKE INDICATOR LIGHT

With the starter switch in "ON" position the bulb lights up when the parking brake lever is pulled, cautioning the driver that the rear wheels will not rotate.



TEMPERATURE GAUGE

The centre area of the water temperature gauge is indicated by a shaded area. When the gauge needle is in the shaded area, normal operating temperature is indicated. However, if the needle moves beyond the centre area mark into the "H" side or hot area of the gauge, stop the engine until the cause of the overheating is determined.



4WD INDICATOR LIGHT (4 x 4 Model Only)

This light will come on when the transfer shift lever is shifted into 4H or 4L position.



LIGHT SWITCH

To turn on the clearance lamps, tail lamps, licence plate lamps, and instrument panel lamps, pull the light control switch knob part way out. To turn on the headlamps in addition to the above mentioned lamps, pull the knob out to a definite stop. (See Fig. 18.)

NOTE: For operation of hazard flasher see Section "In Case of Emergency".

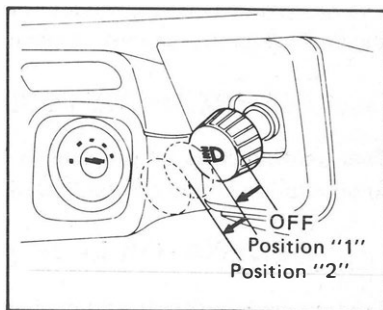


Fig. 18



GLOW INDICATOR LIGHT (Diesel only)

Your diesel engine has a special starting system. Small heating elements, called “glow plugs”, warm part of the engine for improved starting. The “GLOW” indicator light tells you when the engine is ready to be started.

Turning the ignition key to the “ON” position starts the system and turns on the “GLOW” indicator light.

The “GLOW” light may stay on a short time or may go out right away. The waiting time will vary with the engine and coolant temperatures.

When the glow plugs have heated the engine enough for it to start, the “GLOW” light will go out. This tells you the engine is ready to be started. If the light fails to come on, see your dealer.



WINDSHIELD WIPERS AND WASHERS

The windshield wiping system operates at 2 speeds and is designed to wipe clear designated areas of the windshield under most inclement weather conditions. The windshield wipers work electrically and are not affected by engine operations.

- Check washer fluid level regularly—do it frequently when the weather is bad.

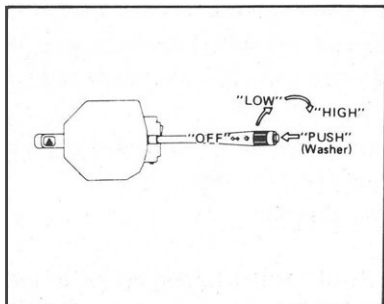


Fig. 19

To start the wiper, turn the switch knob clockwise to LOW or HIGH speed. The two-speed wiper switch has three positions—OFF, LOW and HIGH.

To operate the windshield washers, depress the switch knob to send a jet of washer solvent or water onto the windshield. Turn the switch knob to operate the windshield wiper.

Floor Controls

SERVICE BRAKES

The service brake system is designed for braking performance under a wide range of driving conditions even when the vehicle is loaded to its full rated vehicle load.

CAUTION: Driving through deep water may wet the brakes and adversely affect brake performance so the vehicle will not slow down at the usual rate, and may pull to the right or left. Applying the brakes lightly will indicate whether they have been so affected. To dry them quickly, lightly apply the brakes while maintaining a safe forward speed with an assured clear distance ahead and to the sides until brake performance returns to normal.

SELF-ADJUSTING BRAKES

- The brakes on this vehicle are self-adjusting: discs on front and drums on rear. They have been designed so that periodic brake adjustment is not required.
- The front brakes adjust themselves each time the brakes are firmly applied.
- The rear brakes adjust themselves each time the parking brake is firmly applied.
- If the brake pedal goes down farther than normal, it may be due to a lack of adjustment. To find out if this is the case, apply the parking brake firmly several times with the vehicle stationary.
- See your dealer if pedal height does not return to normal, or if there is a rapid increase in pedal travel, which could be a sign of brake trouble.
- Also see your dealer if the parking brake needs adjustment.

NOTE: “Riding the brake” by resting your foot on the brake pedal when not intending to brake can cause abnormally high brake temperatures, excessive lining wear and possible damage to the brakes.

PARKING BRAKE

A ratchet type hand lever parking brake control is mounted to the left of the steering column under the instrument panel.

- To set parking brake, pull lever. (The parking brake lever travel is normal if it is within 13 ~ 14 notches.)
- For maximum holding power, depress regular brake pedal at the same time.
- To release the brake, turn the lever counterclockwise slightly with the catch pulled and then push the lever forward securely.
- Never drive vehicle with parking brake set as this may overheat or otherwise damage rear brakes.

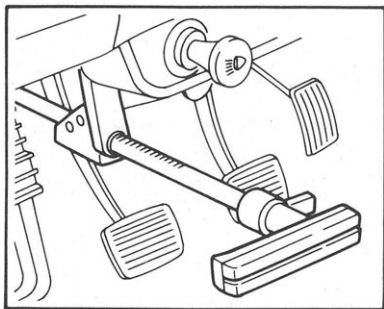


Fig. 21

CLUTCH PEDAL

A clutch pedal is used to engage or disengage the clutch, thereby connecting or disconnecting the engine from the transmission and driveline to rear wheels. When the pedal is fully extended the clutch is engaged, driving the transmission and the rear wheels.

CAUTION: Do not drive with your left foot resting on the clutch pedal, or premature wear of clutch facing will result, causing clutch slippage or juddering.

Others

INTAKE OF OUTSIDE AIR

Air is delivered through the centre vent and side vent on each side when the control lever on the centre lower part of the instrument panel is pulled.

CONTROLLING DIRECTION OF AIR FLOW

- **Centre vent**

The centre vent is provided on the instrument panel. Vertical direction of air flow is controlled by pivoting the entire grille up or down. The knobs at the grille control the direction of air flow horizontally.

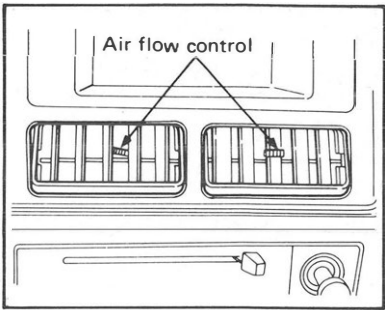


Fig. 22

- **Side vent**

The side vent is provided on each end of the instrumental panel. Horizontal direction of air flow is controlled by pivoting the entire grille sideways. The knob at the centre part of the grille controls direction of air flow vertically.

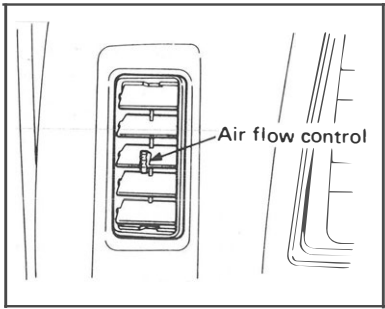


Fig. 23

ENGINE HOOD RELEASE

To raise the engine hood, unlock the safety catch by pulling the release lever under the instrument panel (drive side) and raise the hood all the way up so that it stays in position. Be sure support rod end engages hole on head reinforcement. To close, remove the support rod end from the hole on the hood reinforcement, put the support rod back into the clip on the deflector panel. Then, lower the engine hood to a horizontal level and push down on the front until it is locked in position.

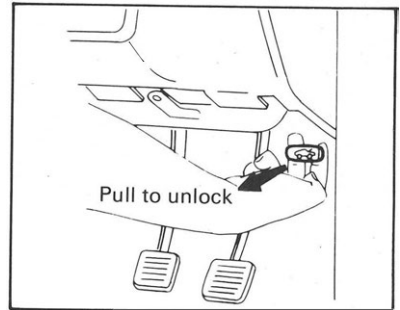


Fig. 24

RADIO (where fitted)

(1) OFF-and-ON switch and volume control knob:

The power switch is of the push button type. Turn the knob to control volume.

(2) Tone control:

Turn the knob to control tone.

(3) Tuning dial:

Turn the dial to tune to the desired station.

(4) Tuning buttons:

Push button into tune in the preset station. Tuning buttons can be set up in the following manner:

1. Pull out the tuning button.
2. Tune in station desired by turning the manual tuning dial.
3. Push in tuning button carefully.

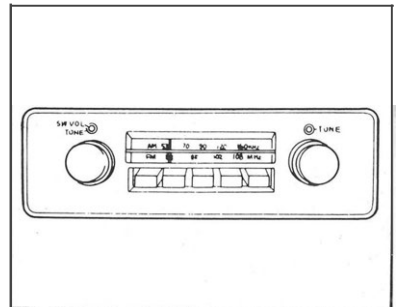


Fig. 25

Antenna:

Pull out the antenna to gain sensitivity.

HEATER-DEFROSTER

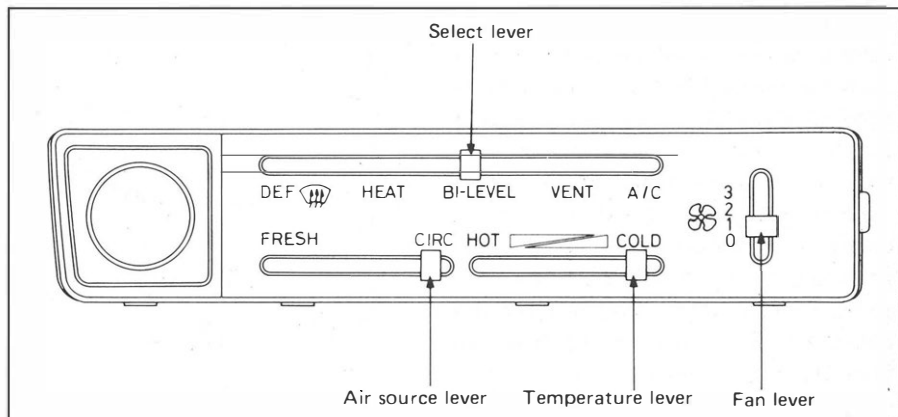


Fig. 26

Fan Lever

The fan lever (OFF-HI) provides speed control of the blower fan in all selector lever positions except OFF.

Temperature Lever

The temperature lever regulates the temperature of the air entering the passenger compartment in all selected lever positions.

Select Lever

The air select lever regulates the air flow to the heater and defroster outlets.

OFF—In this position the blower does not operate. However, when the vehicle is moving, air will enter the passenger compartment through the heater outlet.

BI-LEVEL—Outside air is directed out of the upper outlets and the heater outlets. This position provides comfort and keeps the windshield clear under low fogging conditions.

HEAT—Outside air is delivered from the heater outlets with a small amount from the defroster outlets. This position is used for most winter driving.

DEF—Outside air is delivered from the defroster outlets with a small amount from the heater outlets. To defog the windshield in summer set the temperature lever at "COLD" and the selector lever at "DEF". Set the fan lever at "HI". To defrost or defog the windshield in winter set the temperature lever at "HOT" and the selector lever at "HEAT". Operate system for 30 seconds to remove humid air from the system, then set the selector lever at "DEF" and the fan lever at "HI".

Ventilating

To draw outside air directly into the vehicle, set the Temperature lever at "COLD" and the Select lever at "VENT". Set the fan lever for desired air flow. With the air source lever in position of "FRESH" the outlet grille is adjustable.

Heating

Set the Temperature lever at "HOT" and the Select lever at "HEAT". Inlet air flow temperature may be varied by moving the Temperature lever between "COLD" and "HOT". Set the fan lever for desired air flow. Set the air source lever in position "FRESH".

Windshield Defrosting and Defogging

To defog the windshield in summer set the Temperature lever at "COLD" and the Select lever at "DEF".

Set the Fan lever at "HI". To defrost or defog the windshield in winter set the Temperature lever at "HOT" and the Select lever at "HEAT". Operate system for 30 seconds to remove humid air from the system, then set the Select lever at "DEF" and the Fan lever at "HI". Both in summer and winter operate the system with the air Source lever set in position of "FRESH".

Bi-Level

This position is used to divert heated air to the floor area. Even though the temperature lever can be set in any position between COLD and HOT, it is best to set the lever in the intermediate position when the Select lever is set for Bi-Level so that optimum temperature control can be achieved even in winter, provided the sun is shining.

The fan lever can be set in any position. Operate the system with the air source lever set in position of "FRESH".

HOT AIR INTAKE SYSTEM

In cold seasons when the ambient temperature is around 15°C or lower, the hot air intake valve selector lever on the air cleaner duct should be set in position **W** for intake of hot air to improve fuel combustion while the engine is cold.

The selector lever should be held in position of **S** for normal engine operation, when the environmental temperature is around 15°C or more.

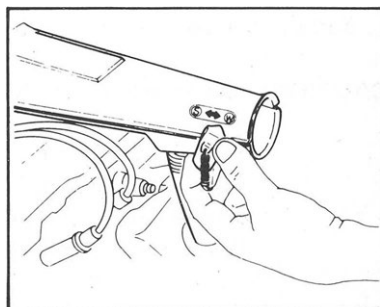


Fig. 29

In Case of Emergency

FOUR-WAY HAZARD WARNING FLASHER

- Use the warning flasher to warn other drivers any time your vehicle becomes a traffic hazard, day or night.
- Turn on the hazard warning flasher, with engine ignition off or on, by pulling out the button located on the left side of the steering column behind the steering wheel.
- To cancel the flasher, push the button in.

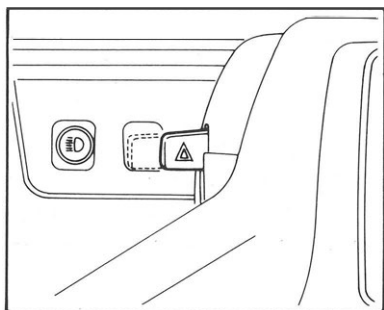


Fig. 30

EMERGENCY STARTING

Jump Starting With Auxiliary (Booster) Battery

- To start the vehicle when the battery is discharged, use a single auxiliary battery of the same nominal voltage, i.e. 12 volts, as the discharged battery, with suitable jumper cables.
- Make connections as set out below under "Jump Starting With Auxiliary (Booster) Battery" to lessen the chance of personal injury or property damage.

CAUTION: Never expose battery to open flame or electric spark—battery action generates hydrogen gas which is flammable and explosive. Don't allow battery fluid to contact skin, eyes, fabrics, or painted surfaces—fluid is a sulphuric acid solution which could cause serious personal injury or property damage. Wear eye protection when working with battery.

Both booster and discharged battery should be treated carefully when using jumper cables. Follow exactly the procedure outlined below, being careful not to cause sparks. (See Fig. 32.)

1. Set parking brake and place transmission in neutral. Turn off lights and other electrical loads.
2. Remove vent caps from both the booster and the discharged batteries. Lay a cloth over the open vent wells of each battery. These two actions help reduce the explosion hazard always present in either battery when connecting "live" booster batteries to "dead" batteries.
3. Attach one end of one jumper cable to the positive terminal of the booster battery (identified by a red colour, "+" or "P" on the battery case, post or clamp) and the other end of same cable to positive terminal or discharged battery. Do NOT permit vehicles to touch each other, as this could establish a ground connection and counteract the benefits of this procedure.

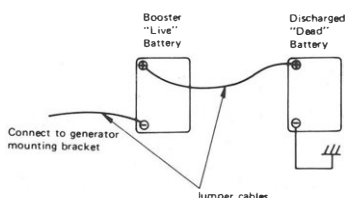


Fig. 32

4. Attach one end of the remaining negative (—) cable to the negative terminal (black colour, "—" or "N") of the booster battery, and the other end to the generator mounting bracket (do not connect directly to negative post of dead battery)—taking care that clamps from one cable do not touch the clamps on the other cable. Do not lean over the battery when making this connection. Reverse this sequence exactly when removing the jumpercables. Reinstall vent caps and discard cloths as these may have corrosive acid on them.

CAUTION: Any procedure other than the above could result in: (1) personal injury caused by electrolyte squirting out the battery vents, (2) personal injury or property damage due to battery explosion, (3) damage to the charging system of the booster vehicle or of the immobilised vehicle.

Do not attempt to jump start a vehicle having a frozen battery because the battery may rupture or explode. If a frozen battery is suspected, examine all fill vents on the battery. If ice can be seen, or if the electrolyte fluid cannot be seen, do not attempt to start with jumper cables as long as the battery remains frozen.

PUSH STARTING

- NEVER TOW the vehicle to start because the surge forward when the engine starts could cause a collision with the tow vehicle.
- When being pushed to start the engine, turn off all unnecessary electrical loads, turn starter switch to "ON", depress the clutch pedal and place the shift lever in high gear. Release the clutch pedal when speed reaches 15 ~ 25 km/h. Bumpers and other parts contacted by the pushing vehicle should be protected from damage during pushing.

TOWING

Proper lifting or towing equipment is necessary, when lifting or towing the vehicle to prevent damage to it during any towing operation. Detailed towing information is available at your dealer and has been provided to tow truck operators responsible for movement of disabled or locked vehicles. However, in an emergency, a disabled or locked vehicle may be towed in the following manner:

- Fit the towing rope (safety chains or cables) in the locations as follows;
Front Strut bar bracket
Rear Shackle

CAUTION: Exercise extreme care, particularly when towing a vehicle with a rope hooked to the axle tube, to guard rear suspension and relative parts against shock load. In any case towing should be for a short distance only.

- When a need has arisen for towing your vehicle, release the parking brake and hold the transmission in neutral. It is important that the transmission and rear axle are in good operating condition to enable the vehicle to be towed.
- When towing a vehicle with trouble in the rear axle;
It is necessary to tow the vehicle with the rear wheels lifted and to disconnect the propeller shaft, or to lift the rear wheels when towing a vehicle with transmission trouble.

In Case of Towing Four Wheel Drive Vehicles:

1. Shift the transfer case into "2H" position.
2. Hold the transmission in "Neutral" position.

FREEING VEHICLE FROM SAND, ETC.

If it becomes necessary to rock the vehicle to free it from sand, mud or snow, move the gear shift lever from second to reverse gear. Do not race engine. For best possible traction, avoid spinning wheels when trying to free the vehicle. Use of tyre chains is recommended for temporary assistance when traction is lost on ice or snow.

CAUTION: Wheel spin should not exceed 55 km/h as indicated on the speedometer. Unless care is taken in limiting rear wheel spin, one spinning wheel can reach excessive speeds, resulting in possible tyre disintegration or differential failure, which could cause personal injury or extensive vehicle damage.

ENGINE OVERHEATING

The following symptoms will become apparent if engine overheats.

- The coolant temperature gauge pointer will move up to the uppermost line of 120°C or higher.
- Engine ping will become excessive.
- Loss of engine power will be noticed.
- Either steam or boiling water may squirt out of the radiator.

If overheating is detected, take the following steps.

- Stop the vehicle and open the engine hood to provide good ventilation.
- Run the engine at a speed (around 1,500 rpm) slightly higher than idle speed for about 5 to 10 minutes. However, if the fan drive belt is broken or if engine coolant is leaking, stop the engine immediately.
- Stop the engine and carefully remove the radiator cap.

CAUTION: To Remove the Radiator Cap When Engine is Hot;

Do not remove radiator cap while engine and radiator are still hot, because the cooling system will blow out scalding fluid and steam under pressure.

To prevent loss of coolant and avoid the danger of being burned, coolant level should be checked, and coolant added only when engine is cool.

To Remove the Radiator Cap When Engine is Cool;

Slowly rotate cap counterclockwise to detent (DO NOT PRESS DOWN WHILE ROTATING). Wait until any residual pressure is relieved—as indicated by a hissing sound. After any hissing ceases, press down on cap while continuing to rotate counterclockwise.

Radiator pressure caps should be checked annually by a qualified mechanic for proper operation and replaced as required with the applicable type.

- Check coolant level and replenish with fresh water up to the level of the filler neck when the engine is cold.

Incorrect ignition timing, a loose fan drive belt, insufficient level of engine lubrication oil and/or engine coolant, radiator fins clogged up with foreign matter and radiator tubes blocked are possible causes of engine overheating. Determine the cause of trouble and correct as soon as possible.

WHEN OIL PRESSURE INDICATOR LIGHT COMES ON

- If the oil pressure indicator light comes on while engine is running, immediately stop engine.

CAUTION: Do not run the engine at high speed when the oil pressure indicator light is on, otherwise the engine may be damaged.

- Check the level of the engine oil and check for leakage of lubricating oil at the same time. Replenish with proper engine oil up to the specified level, if necessary, and restart the engine to see that oil pressure indicator light goes out.

If the oil pressure indicator light does not go out even with sufficient level of lubricant in the crankcase, or lubricant is leaking, obtain assistance from your GMH dealer.

WHEN CHARGE INDICATOR LIGHT COMES ON

- This indicates that the alternator is not generating. Immediately stop your vehicle and check for loose or broken fan drive belt. If loose, adjust belt tension. If the belt is found broken, or if the fan belt is not responsible for the trouble, have your GMH dealer inspect and correct the fault.

CAUTION: Driving under this condition will eventually discharge the battery. If fan belt is loose or broken, overheating of engine will result. **DO NOT** drive for an extended period of time if the charge warning light is on.

WHEN AN ELECTRICAL DEVICE IS INOPERATIVE

- If chassis electrical trouble is encountered without extreme damage to any electrical parts, check for burned out fuse, broken wire, poor connections or poor grounding and correct as necessary.

NOTE: The fuse box is located on the left side valance panel within the engine compartment. It includes 6 fuse cartridges plus 4 spare fuse cartridges. (For amperage of fuses, refer to "Specifications" in the later section.)

CAUTION: When replacing a fuse be sure to use a fuse of the specified amperage. Never install a wire or similar for replacement as it may cause a fire hazard to the vehicle.

- If the cause of trouble cannot be located through the above checks and trouble persists, contact your nearest GMH dealer.

AIR BLEEDING OF FUEL SYSTEM (DIESEL ENGINE)

If the fuel tank has been emptied, the chance is that air might have entered the fuel system. With air in the fuel system, smooth flow of fuel into the engine is interrupted and to prevent this, bleeding of the fuel system should be performed.

1. Pull out the feed pump on the fuel injection pump by loosening the cap and pump the fuel into the injection pump by manually operating the feed pump.
2. With a screwdriver or a wrench, loosen the bleeder screw on the injection pump and continue to pump the feed pump until air bubbles disappear from the fuel pumped out through the bleeder screw.
3. Securely tighten the bleeder screw when air bubbles disappear and the fuel comes out in a solid stream.

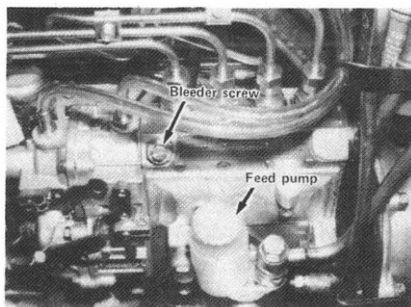


Fig. 33

JACKING INSTRUCTIONS AND CHANGING A FLAT TYRE

Jack, tools and spare wheel wrench are stored behind seat. (See Fig. 34.)

NOTE: The spare wheel can be removed or stowed in position by using the spare wheel wrench. Fit the hooked end of the wrench into a slot in the spare wheel winch.

Turn the handle counterclockwise to lower the spare wheel to the ground. When storing the wheel, turn the handle clockwise to raise the wheel. (See Fig. 35.)

CAUTION: When the wheel is raised all the way into stowage position, turn the crank further to ensure wheel being held securely in position. Remove and stow wrench.

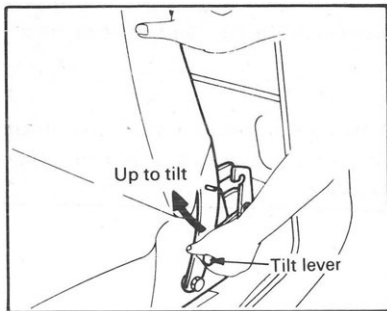


Fig. 34

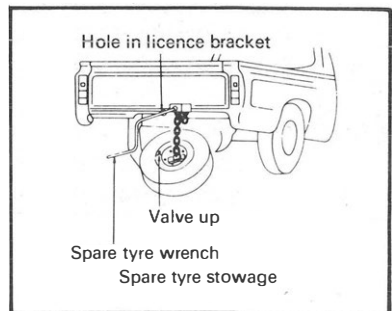


Fig. 35

Preparations:

- Park on a level surface and set parking brake firmly.
- Set transmission in "reverse".
- Activate hazard warning flasher.
- Block the wheel diagonally opposite the jack position.
- Remove hub cap with tool provided.
- Loosen but do not remove wheel nuts.
- Place jack at recommended jacking point. (See Fig. 36 & 37.)

CAUTION: Follow jacking preparations and instructions in order to reduce the possibility of serious personal injury. Stand clear of and never get beneath the vehicle when it is supported only by a jack. Do not start or run engine while vehicle is on jack.

Jacking Points of Vehicle

Front	Under the sidemember (4 x 2 Model)
	Under the lower control arm (4 x 4 Model)
Rear	Under the rear axle case

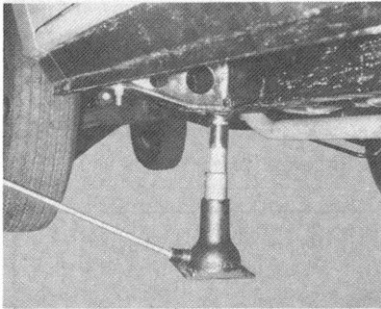


Fig. 36

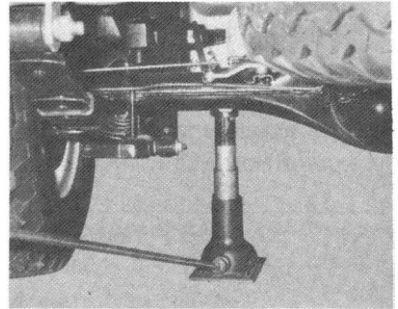


Fig. 37

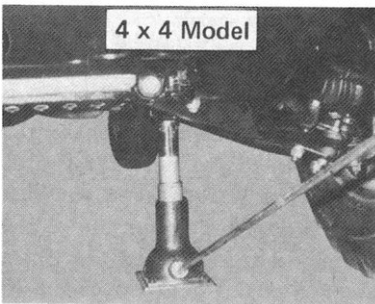


Fig. 38

Wheel Nut-Torques:

88 Newton metres (65 ft. lbs.).

Appearance Care

INTERIOR

Dust and loose dirt that accumulate on interior trim should be removed frequently with a vacuum cleaner, whisk broom or soft brush. Vinyl trim should be wiped clean with a damp cloth. Normal cleanable trim soilage, spots or stains can be cleaned with the proper use of trim cleaners available through GMH dealers or other reputable supply outlets.

CAUTION: When cleaning interior trim, do not use volatile cleaning solvents such as: acetone, lacquer thinners, enamel reducers, nail polish removers; or such cleaning materials as laundry soaps, bleaches, or reducing agents. Never use carbon tetrachloride, gasoline or naphtha for any cleaning purpose. These materials may be toxic or flammable, or may cause damage to interior trim.

EXTERIOR

Frequent washing and thorough cleaning after exposure are recommended to prevent damage to vehicle finish from calcium chloride and other salts, road tar, insects, tree sap, factory chemicals and other foreign matter. Use either cold or lukewarm water. Never wash vehicle in the direct rays of the sun and always wait until painted surfaces have cooled.

EXTENDED VEHICLE STORAGE

If you plan to store your truck over an extended period of time, certain steps should be taken to give it maximum protection. It is recommended that you contact your nearest GMH dealer for detailed instructions on how to prepare your truck for storage.

Emission Control Systems

PETROL ENGINES ONLY

IMPORTANT: This is an explanation of the operation of the emission control systems fitted to your new vehicle and should remain with the vehicle at the time of resale.

INTRODUCTION

There are three areas from which pollutants are emitted:

- (a) Exhaust System
- (b) Crankcase
- (c) Fuel System.

A number of controls have been installed to control the amount of pollutants emitted from your new vehicle.

The following has been produced to assist you in understanding their function by briefly explaining the operation of the various components involved.

SOURCES OF EMISSIONS

During the combustion process in an automotive engine, some of the fuel (hydrocarbons) fails to burn and is discharged into the engine crankcase or exhaust system. Additionally hydrocarbons are emitted into the atmosphere through evaporation of petrol vapours from the fuel tank and carburettor. Of the total hydrocarbons coming from uncontrolled automobiles, about 25% are emitted from the crankcase, 20% from the fuel system and 55% from the engine exhaust.

In addition to hydrocarbons, carbon monoxide and oxides of nitrogen are also formed during the combustion process. These are also discharged into the exhaust system.

EXHAUST EMISSIONS

The exhaust of a petrol automobile engine contains three significant air pollutants; carbon monoxide, unburned hydrocarbons, and oxides of nitrogen. It also contains small amounts of solid matter—called particulates—made up largely of lead compounds from the tetraethyl lead used to increase the octane rating of petrol.

Control of hydrocarbon emissions is important since, when subjected to sunlight under certain conditions, they may react with other gases to form photochemical smog. Carbon monoxide does not enter into the complex of photochemical smog reaction, but it is itself a pollutant and, thus, has been controlled to prevent high atmospheric concentrations.

EXHAUST EMISSION CONTROL SYSTEMS

Controlled Combustion System (CCS) Components

Carburettor

The carburettor has been calibrated to give a lean mixture of a good quality, particularly at idle or during slow speed operation.

Automatic Choke

An electrically heated metal strip coil is used to open the choke. As the metal strip heats up the choke progressively comes out of operation.

Distributor

The advance curve of the ignition distributor contributes to meeting the emission limits.

Idle Stop Solenoid

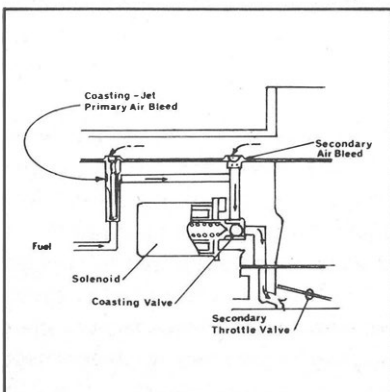
An idle stop solenoid, which shuts off the idle fuel mixture when the ignition switch is turned off, has been introduced to reduce the possibility of engine run-on.

Cooling System Thermostat

The thermostat opening temperature has been revised to meet the requirements of the system during engine warm-up.

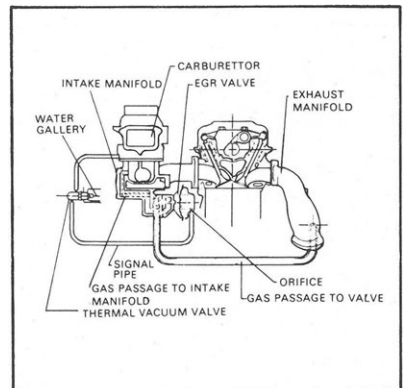
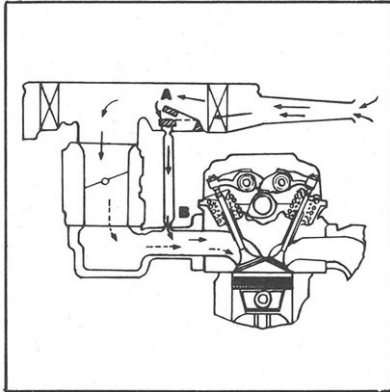
COASTING RICHER SYSTEM (CR)

The Coasting Richer System fitted to Holden Rodeo, is an independently operated auxiliary fuel system actuated by a solenoid on the carburettor. When energised, the solenoid retracts a plunger that allows an air/fuel mixture to enter under the secondary throttle valve. This mixture brings the air/fuel ratio back into balance for efficient combustion while the vehicle is operating under closed throttle conditions in third or fourth gear.



HOT IDLE COMPENSATOR SYSTEM (HIC)

Located in the air cleaner the Hot Idle Compensator valve is operated by a bi-metallic arm. (A) As the temperature in the air cleaner reaches approximately 47°C the valve opens and allows filtered air to enter through a restricted orifice into the intake manifold (B) via a connecting hose. This increases idle speed and air flow, leaning off the air fuel mixture and thus reducing HC and CO content. It also gives a smoother idle as intake air temperature increases.



EXHAUST GAS RECIRCULATION (EGR) SYSTEM

This system introduces controlled quantities of exhaust gas into the inlet manifold resulting in lower peak combustion temperatures in the combustion process which, in turn, reduces the formation of nitrogen oxides.

A thermal vacuum valve opens the vacuum line to the exhaust gas recirculation valve only after the engine coolant has reached a predetermined temperature. At this stage the valve is subjected to a ported vacuum signal from the carburettor.

VACUUM ADVANCE CONTROL (VAC) SYSTEM

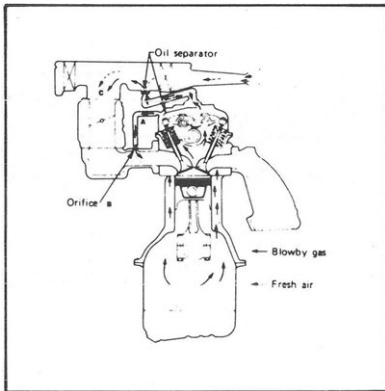
This system is designed to control the vacuum signal available to the vacuum advance mechanism of the distributor. A "ported" vacuum spark advance system is used to optimise emission control as well as vehicle performance. When the throttle is in the idle position, the "port" which is above the throttle valve, has no vacuum present. As the throttle opens the port is uncovered providing vacuum advance for normal economy operation.

CRANKCASE EMISSION CONTROL SYSTEM

Positive Crankcase Ventilation (PCV) System

The purpose of the system is to draw the blow-by gases out of the crankcase, into the intake manifold system and thus recycle these gases through the combustion process in the cylinders.

At idle and during normal driving conditions gases are drawn out of the crankcase via a hose (A) through the restricted orifice (B) into the intake manifold. During acceleration or constant high speed operation some of the blow-by gas is drawn into the carburettor via the air cleaner (C).



CRANKCASE EMISSIONS

Emission of hydrocarbons from the engine crankcase is another source of automotive air pollution. This emission occurs in the following manner.

During the combustion process in all petrol engines, some gases escape past the piston rings and into the crankcase. These gases contain unburned fuel. This "blow-by" occurs because of the very high pressures in the combustion chambers.

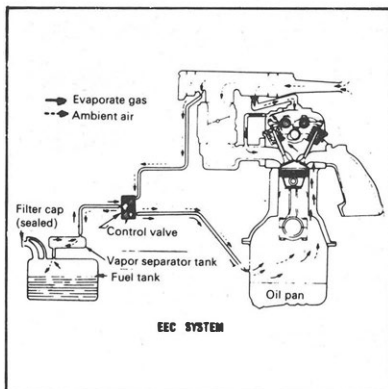
EVAPORATIVE EMISSIONS

Another source of emissions from automobiles is evaporation of petrol. This occurs, not only when the fuel tank is being filled, but at other times, even when the vehicle is not in operation. Special systems to control evaporation have recently been developed, and are now installed on Holden Rodeo KB.

EVAPORATIVE EMISSION CONTROL (EEC) SYSTEM

The fuel vapours are directed from the liquid/vapour separator tank to the engine oil pan and purged via the PCV system. In order to prevent vapours flowing to the air

cleaner, the relief valve on the air cleaner side of the Control Valve remains closed while the check valve to the crankcase is open. The relief valve also compensates pressure/vacuum in the fuel tank.



MAINTENANCE

The required owner emission control systems maintenance operations presented in this Owners Handbook should be performed by an authorised GMH dealer or any other qualified service outlet which regularly performs such services.

VEHICLE OPERATIONS

The maintenance instructions contained in the Owner Handbook, are based on the assumption that your vehicle will be used as designed and is operated in accordance with the instruction provided in the handbook.

SERVICE MANUALS

Service manuals, providing greater detail on emission systems, are available for purchase by owners who desire to perform their own vehicle maintenance. These are available from a GMH dealer.

SERVICE REPLACEMENT PARTS

The emission control systems of your new vehicle were designed, built and tested using GMH parts and the vehicle is certified as being in conformity with Australian Design Rules covering emissions.

Accordingly, it is recommended that any replacement parts used for required maintenance services or for the repair of emission control systems be new GMH parts. Use of replacement parts which are not of equivalent quality may impair the effectiveness of such systems, and may adversely affect your vehicle Warranty.

Vehicle Emission Control
Information Label

VEHICLE EMISSION CONTROL INFORMATION
ENGINE TUNE-UP CONDITIONS

MAKE IDLE SPEED AND TIMING ADJUSTMENTS WITH ENGINE AT NORMAL OPERATING TEMPERATURE. CHOKE OPEN, AIR CLEANER INSTALLED AND DISTRIBUTOR, IDLE COMPENSATOR AND EGR VACUUM LINES DISCONNECTED AND PLUGGED, DASHPOT FULLY SHIFTED, AND TRANSMISSION IN NEUTRAL. RECONNECT THE VACUUM LINES WHEN ADJUSTMENTS ARE COMPLETED.

SET PARKING BRAKE AND BLOCK DRIVE WHEELS.

IDLE SPEED AND IDLE MIXTURE SETTING PROCEDURE

1. TURN THE IDLE MIXTURE ADJUST SCREW ALL THE WAY IN AND BACK OUT 3 TURNS
2. ADJUST THROTTLE. ADJUST SCREW TO SPECIFIED IDLE SPEED.
3. ADJUST SETTING OF IDLE MIXTURE. ADJUST SCREW TO ACHIEVE THE MAXIMUM ENGINE SPEED
4. RESET THROTTLE. ADJUST SCREW TO SPECIFIED IDLE SPEED.
5. TURN IDLE MIXTURE. ADJUST SCREW CLOCKWISE (LEAN) UNTIL ENGINE SPEED IS DOWN TO 650 RPM.
6. RESET IDLE MIXTURE. ADJUST SCREW 1/2 TURN COUNTERCLOCKWISE (RICH) FROM ITEM 5 POSITION
7. RESET THROTTLE. ADJUST SCREW TO SPECIFIED IDLE SPEED.
8. ADDITIONAL PROCEDURE (DASHPOT SETTING) MAINTAIN THE ENGINE SPEED, BETWEEN 2,000 RPM AND 2,400 RPM SET THE DASHPOT TO CONTACT THE DASHPOT SHAFT END WITH THE DASHPOT LEVER, AND THEN FULLY TIGHTEN THE LOCK NUT

IGNITION TIMING SETTING PROCEDURE

1. SET SPECIFIED IDLE SPEED.
2. CONNECT TIMING LIGHT LEAD TO NUMBER 1 CYLINDER.
3. ALIGN MARK ON CRANKSHAFT PULLEY TO TIMING MARK WITH TIMING LIGHT AIMED TOWARD TIMING MARK.

CAUTION: REMOVAL OF ADJUSTMENT CAP AND ALTERATION TO OTHER THAN SPECIFIED IDLE MIXTURE, SETTING MAY VIOLATE STATE LAWS. SEE SERVICE MANUAL FOR FURTHER INFORMATION.

ENGINE	IGNITION		PLUG GAP	IDLE SPEED
	DWELL	TIMING		
L4 1600	52°	6° BTDC	0.75 mm	700 RPM

P No. 8942201240



Safety Checks

This section discusses the various components and systems of your vehicle that should be checked regularly to help maintain safe and dependable vehicle operation. Some checks should be made by your dealer or service station, and can be done conveniently while your vehicle is in the shop for other regular maintenance service. Other checks can be made easily by you, the owner.

CHECKS TO BE PERFORMED BY YOUR DEALER OR SERVICE STATION

Checks to be made at First 1,000 km (600 miles)

- **Drive Belt**—Check fan drive belt for cracks, wear and tension.
Adjust or replace as necessary.

Checks to be Made Every 10,000 km (6,000 Miles) or 4 Months, whichever occurs first.

- **Drive Belt**—Check fan drive belt for cracks, wear and tension.
Adjust or replace as necessary.
- **Fluid or Lubricant Levels**—Check level of fluid or lubricant in brake master cylinder, battery, rear axle, front axle (4 × 4 models), engine and transmission. Check fluid level of windshield washer reservoir. Engine coolant should be checked for proper level. Any significant fluid loss in any of these systems or units could mean that a malfunction is developing and corrective action should be taken immediately.
- **Suspension and Steering**—Check for damaged, loose or missing parts, or parts showing visible signs of excessive wear or lack of lubrication in front and rear suspension and steering system. Questionable parts noted should be replaced by a qualified mechanic without delay.
- **Tyres and Wheels**—Check tyres for excessive wear, nails, glass, cuts or other damage. Make certain wheels are not bent or cracked and wheel nuts are tightened to 88Nm (65 ft-lbs). Uneven or abnormal tyre wear may indicate the need for alignment service. Check tyre inflation pressure at least monthly, or oftener if daily visual inspection indicates the need.
Truck type tyres should be replaced when tread depth becomes 1.6 mm (1/16 inch).
- **Exhaust System**—Check complete exhaust system and nearby body areas for broken, damaged, missing or mispositioned parts, open seams, holes, loose connections or other deterioration which could permit exhaust fumes to seep into passenger compartment. Dust or water inside the cab may be an indication of a

- problem in one of these areas. Any defects should be corrected immediately. To help ensure continued integrity, exhaust pipes rearward of the muffler must be replaced whenever a new muffler is installed. Use genuine parts specified for your vehicle.
- **Parking Brake Linkage**—Lubricate all parking brake linkage with water resistant chassis lubricant as specified. Check for damaged or missing parts, interference or binding. Any deficiencies should be corrected without delay by qualified mechanic.
- **Brake Lines and Hoses**—Check lines and hoses for proper attachment, leaks, cracks, chafing, deterioration, etc. Any questionable parts noted should be replaced or repaired immediately. When abrasion or wear is evident on lines or hoses, the cause must be corrected, and the lines or hoses replaced.

Checks to be Made Every 20,000 km (12,000 Miles) or 12 Months, whichever occurs first.

- **Lighting System**—Check headlights for proper aim. Correct as necessary. More frequent checks should be made if oncoming motorists signal when you are already using your low beams, or if illumination of the area ahead seems inadequate.
- **Accelerator Control**—Lubricate accelerator pedal bushing with chassis lubricant. Check for damaged or missing parts, interference or binding. Any deficiencies should be corrected without delay by a competent mechanic.
- **Service Brakes and Parking Brake**—Check disc and drum brake linings and other internal brake components at each wheel (drums, wheel cylinders, etc.). Parking brake adjustment also should be checked whenever drum brake linings are checked.

Note: Replace Deceleration Sensing Valve every 2 years.

CHECKS TO BE PERFORMED BY OWNER (Owner Safety Check)

Listed below are the safety checks that should be made by the owner.

These checks should be made every 4 months or 10,000 km (6,000 miles) whichever occurs first, or more often when the need is indicated. Any deficiencies should be brought to the attention of your dealer, as soon as possible, so the advice of a qualified mechanic is available regarding the need for repairs or replacements.

- **Lap and Shoulder Belts**—Check belts, buckles, retractors and anchors for cuts, fraying or weakened portions, loose connections, damage, and proper latching and releasing action. Check that anchor mounting-bolts are tight to the floor.

- **Steering**—Be alert to any changes in steering action. The need for inspection or servicing may be indicated by “hard” steering, excessive free play or unusual sounds when turning or parking.
- **Windshield Wipers and Washers**—Check condition and alignment of wiper blades. Check amount and direction of fluid sprayed by washers during use.
- **Wheel Alignment and Balance**—In addition to abnormal tyre wear the need for wheel alignment service may be indicated by a pull to the right or left when driving on a straight and level road. The need for wheel balancing may be indicated by a vibration of the steering wheel or front end while driving.
- **Brakes**—Be alert to changes in braking action such as repeated pulling to one side, unusual sounds when braking or increased brake pedal travel. Any of these could indicate the need for brake system inspection and/or service.
- **Parking Brake**—Check parking brake holding ability by parking on fairly steep hill and restraining the vehicle with the parking brake only.
- **Glass**—Check for broken, scratched, dirty or damaged glass on vehicle that could obscure vision or become an injury hazard.
- **Lights**—Check all instrument panel indicator lamps, and interior lights, and licence plate lamp, headlamps, parking lamps, tail lamps, stop lamps, turn signals, backup lamps, clearance lamps and hazard warning flashers. Have someone observe operation of each exterior light while you activate the controls.
- **Horn**—Blow the horn occasionally to be sure that it works.
- **Rearview Mirrors and Sun Visors**—Check that friction joints are properly adjusted so mirrors and sun visors stay in the selected position.
- **Door Latches**—Check for positive closing, latching and locking.
- **Hood Latches**—Check to make sure hood closes firmly by lifting on the hood after each closing. Check also for broken, damaged or missing parts which might prevent secure latching.
- **Fluid Leaks**—Check for fuel, water, oil or other fluid leaks by observing the ground beneath the vehicle after it has been parked for a while. Also observe fluid lines and hoses connection points. If petrol fumes or fluid are noticed at any time, the cause should be determined and corrected without delay because of the possibility of fire.
- **Seat Back Latches**—Check to see that seat back latch is holding by pulling forward on the top of folding seat back.

Conscientious attention to all of these safety checks on a regular basis and prompt correction of any problems will help to keep you, your passengers and your vehicle safer, thus avoiding or reducing potential injuries and damage.

Service and Maintenance

Periodic Maintenance

ENGINE OIL AND FILTER RECOMMENDATIONS

- Use SE engine oil for petrol engine, and CC or CD engine oil for diesel engine (See Section “Recommended Lubricants”.)
- Change oil after first 1,000 km and each 5,000 km thereafter, but more often under the following conditions:
 - driving in dusty conditions
 - extensive idling
 - short-trip operation at freezing temperatures (engine not thoroughly warmed up).
- Operation in dust storms may require an immediate oil change.
- For petrol engine, replace the oil filter at the first oil change, and every second oil change thereafter. For diesel engine, replace the oil filter element after the first 1,000 km, and thereafter every 15,000 km. See your dealer for advice on the frequency of oil and filter changes under unusual driving conditions.

The above recommendations apply to the first change as well as subsequent oil changes. The oil change interval for your engine is based on the use of SE oils for petrol engine (CC or CD for diesel engine) and quality oil filters. Oil change intervals longer than those listed above will seriously reduce engine life and may affect entitlement under the provisions of the New Vehicle Warranty. Check the oil level frequently during the break-in period since higher oil consumption is normal until the piston rings become seated.

NOTE: Non-detergent and other low quality oils are specifically not recommended. The use of SE engine oils for petrol engine (CC or CD for diesel engine) and proper oil and filter change intervals promote continued reliability and performance from your engine.

The proper oil viscosity helps assure good cold and hot starting.

RECOMMENDED VISCOSITY

Select the proper oil from the "Recommended Lubricant". (See Section "Recommended Lubricant".)

Use the correct oil viscosity for existing ambient temperatures as shown in Fig. 39.

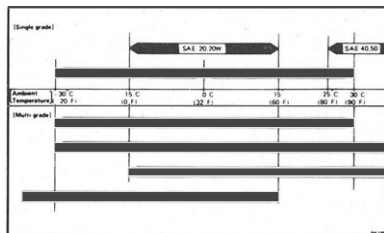


Fig. 39

CHECKING OIL LEVEL

The engine oil should be maintained at proper level. The best time to check it is before operating the engine or as the last step in a fuel stop.

This will allow the oil accumulation in the engine to drain back in the crankcase. To check the level, remove the oil gauge rod (dip stick), wipe it clean and reinsert it firmly for an accurate reading. The oil gauge rod has marking which indicates the normal oil level.

If the oil level is lower than the marked area, it indicates the need for replenishment. The oil level should be maintained within the level mark at all times.

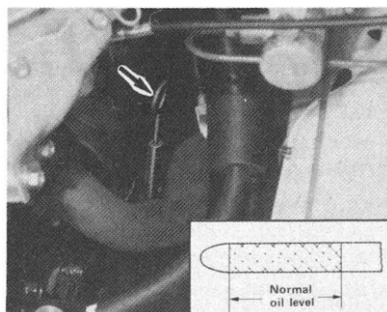


Fig. 40

LUBRICATION OF GOVERNOR CHAMBER (Diesel)

Remove the plug from the governor chamber and apply a few drops of vacuum cylinder oil to the governor diaphragm. (See Fig. 41.)

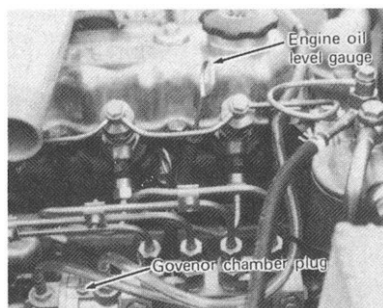


Fig. 41

DRIVE BELT

Drive belt should be checked at the first 1,000 km and every 10,000 km thereafter for proper tension. A loose belt will affect water pump and generator operation.

The fan belt tension is normal if the belt gives a lateral deflection of about 10 mm (0.4 in.) when a good finger pressure is applied to the midway between the fan pulley and generator pulley. To adjust the fan belt tension, turn loose the bolt on the generator bracket and on the adjust plate and pivot the generator as required.

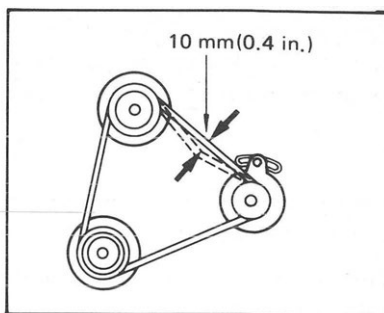


Fig. 42

VALVE CLEARANCE

Incorrect valve clearance will result in increased engine noise and lower engine output thereby adversely affecting engine performance. Re-tighten rocker shaft nuts before checking and adjusting valve clearance.

MANIFOLD, CYLINDER HEAD MOUNTING

Manifold mounting nuts and cylinder head bolts should be carefully adjusted to correct torque to compensate for compression of gasket.

Manifold mounting nuts torque: 20 Nm. (14 ft-lbs)

Cylinder head bolt torque: 98 Nm. (72 ft-lbs) Petrol engine

78 Nm. (58 ft-lbs) Diesel engine

ELECTRICAL SYSTEM

Battery Care—Check the battery electrolyte every month. If the levels are lower than the specified level add colourless and odourless drinking water or distilled water to bring to the proper level.

In freezing weather the vehicle must be driven after adding water to properly mix it with the electrolyte and prevent freezing.

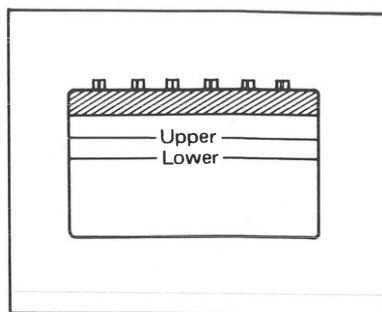


Fig. 43

CAUTION: Never expose battery to open flame or electric spark—chemical action generates hydrogen gas which is flammable and explosive. Don't allow battery fluid to contact skin, eyes, fabrics, or painted surfaces—fluid is a sulphuric acid solution which could cause serious personal injury or property damage. Wear eye protection when working with battery.

Battery Terminals—The battery cable terminals must be clean and tight. When corrosion appears on the terminals they should be cleaned in a solution of baking soda and water or ammonia and water. After cleaning, the top of the battery should be flushed off with clean water.

Generator—The connections in the entire charging system must be kept tight and free from corrosion or anything that will cause high resistance in the circuit.

NOTE: Never remove generator "battery" lead without first disconnecting battery ground cable.

CAUTION: Do not short across or attempt to polarise system.

Starting Motor—Check the solenoid mounting and starting motor mounting bolts periodically.

Bulb Service

Due to the different types of lamps, there are several different procedures covering bulb replacement.

Headlights

- Remove the radiator grille.
- Loosen the three screws fixing the sealed beam unit and remove the sealed beam unit by turning the retaining ring counterclockwise.
- To install, fit the bosses on the headlight lens into the grooves so that the top mark side is turned up.

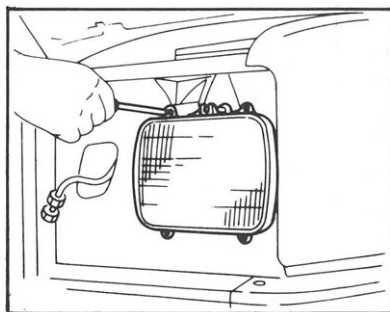


Fig. 44

NOTE: Proper aiming of the headlights is most important to assure sufficient illumination of the highway without blinding other motorists. When light aiming is necessary it is advisable to contact a GMH dealer who has special equipment for this purpose.

Front combination lamps

Take out two screws fixing the lens and remove the lens. Remove the bulb from the socket by pushing it in and turning it counterclockwise.

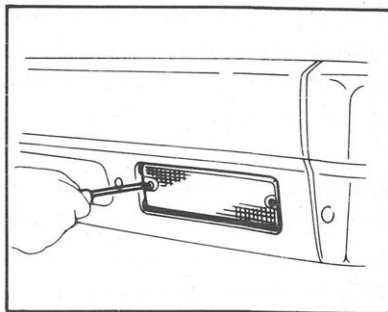


Fig. 45

Rear combination lamps

Take out the six screws fixing the lamp lens. Remove the bulb from the socket by pushing it in and turning it counterclockwise.

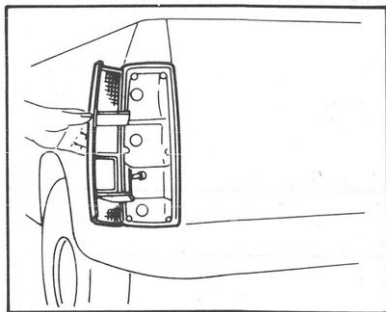


Fig. 46

Side turn signal lamps

Take out two screws fixing the lens and remove the lens, then pull out the bulb.

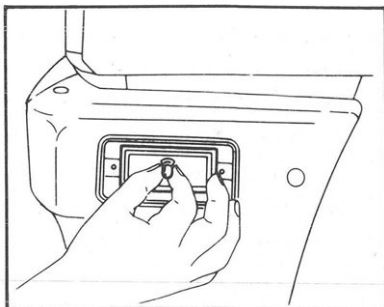


Fig. 47

Number plate lamp

Take out the two screws retaining the lamp lens. Remove the bulb from the socket by pulling it.

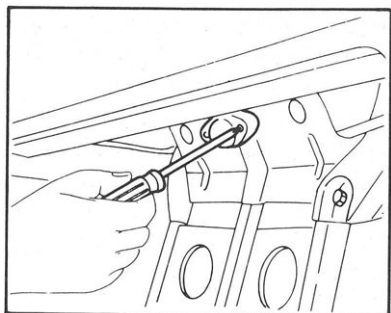


Fig. 48

Dome lamp

Open the cover, and then snap off the bulb.

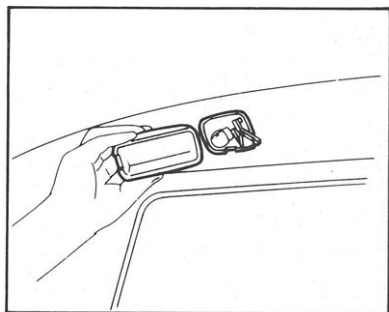


Fig. 49

FUEL SYSTEM

Carburettor (Petrol Engine)

Tighten the carburettor to manifold and the manifold to cylinder head stud nuts to prevent air leaks. Setting and adjusting of the carburettor has a definite bearing on the engine performance and the contents of the exhaust gases. As the carburettor is intricate in design and necessitates the use of various instruments for adjustment, avoid overhauling and random adjustment and have your GMH dealer or distributor check and adjust it regularly.

Fuel Filter (Petrol Engine)

The fuel filter is installed on the frame side member near the fuel tank. It should be replaced every 20,000 km.

It is clipped in position and can be removed easily by disconnecting two fuel hoses.

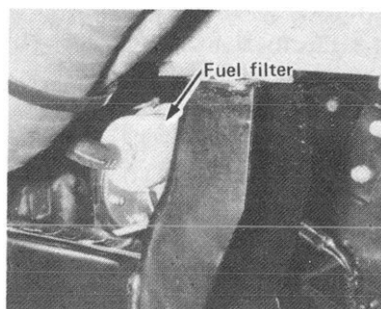


Fig. 50

Accelerator Linkage

Check, adjust and lubricate with engine oil every 12 months or 20,000 km.

Air Cleaner

The air cleaner uses a viscous type element so that servicing is unnecessary until 40,000 km of replacement interval is reached. However, element replacement intervals should be shortened accordingly if the vehicle is operated mainly in dusty areas.

NOTE: It is strongly advised to use genuine GMH air cleaner element at the time of replacement as it is a viscous type and differs from conventional dry type air cleaner in construction and function.

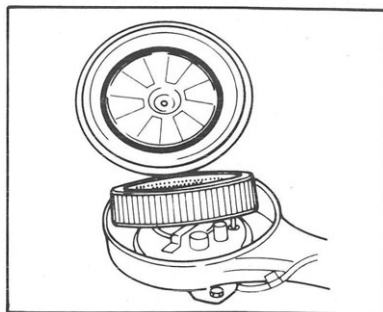


Fig. 51

CAUTION: Do not attempt to clean element even if it is fouled as the element is designed to provide normal filtering efficiency before it becomes due for replacement.

CAUTION: The engine air cleaner should be installed at all times unless temporary removal is necessary during repair or maintenance of the vehicle, because in the absence of the air cleaner, backfiring could cause a fire in the engine compartment.

Electrical Fuel Pump (Petrol Engine)

The electrical fuel pump should be checked regularly to make sure the setting screws and rubber hoses are tight.

Fuel Filter (Diesel Engine)

At every 15,000 km replace the fuel filter assembly.

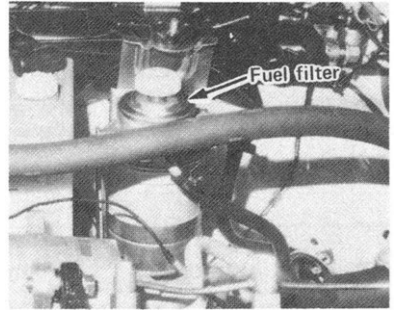


Fig. 52

Feed Pump Strainer (Diesel Engine)

Remove the joint bolt on the intake side of the feed pump, then screw out the strainer and clean it.

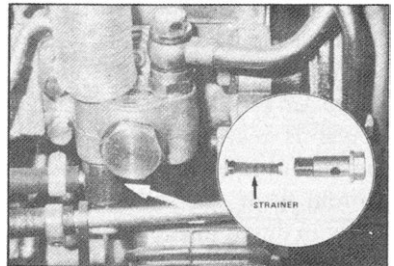


Fig. 53

ENGINE COOLING SYSTEM

- The cooling system of vehicle is filled with a coolant containing 50 per cent of anti-freeze solution (freezing temperature is approximately 38°C (36°F)).
- Check coolant level and replenish with fresh water up to the level of the filler neck when the engine is cold. DO NOT REMOVE RADIATOR CAP WHEN SOLUTION IS HOT AND UNDER PRESSURE.

NOTE: Supplemental inhibitors or additives claiming to provide increased cooling capability that have not been specifically approved by GMH are not recommended for addition to the cooling system. These additives may be detrimental to the efficient operation of the system, and may represent an unnecessary operating expense.

Every year, the cooling system should be serviced as follows:

1. Wash radiator cap and filler neck with clean water.
2. Pressure test system and radiator cap for proper pressure holding capacity. 100 kPa (15 psi).
3. Tighten hose clamps and inspect all hoses. Replace hoses whenever cracked, swollen or otherwise deteriorated.
4. Clean frontal area of radiator core.

Every year or 20,000 km, whichever first occurs, the cooling system should be drained and refilled as follows:

1. Run engine, with radiator cap removed, until normal operating temperature is reached.
 2. Drain coolant through the radiator drain valve. (To speed this operation, the drain plug in block can also be removed.)
 3. Close valve (install block drain plug, if removed) and add sufficient water to fill system.
 4. Run engine, drain and refill the system, as described in steps 1, 2 and 3, a sufficient number of times until the drained liquid is nearly colourless.
 5. Allow system to drain completely and then close radiator drain valve tightly. (Install block drain plug, if removed.)
 6. Run engine, with radiator cap removed, until normal operating temperature is reached.
 7. Check and adjust coolant to proper level and install radiator cap.
- Add ethylene glycol base coolant when coolant additions are required.

NOTE 1: It is the owner's responsibility to keep the freeze protection at a level commensurate with the temperatures which may occur in the area of vehicle operation.

NOTE 2: Alcohol or methanol base coolants are not recommended for your Holden Rodeo KB light-duty truck at any time.

THERMOSTAT

The cooling system is protected and controlled by a thermostat installed in the engine coolant outlet to maintain a satisfactory operation temperature of the engine. This thermostat is designed for continuous use through both winter and summer and need not be changed seasonally.

MANUAL TRANSMISSION

Replace oil at first 10,000 km and every 40,000 km thereafter. Every 10,000 km or 4 months, whichever occurs first, check at operating temperature and fill as necessary to level of filler plug hole. Use engine oil of the correct oil viscosity for existing ambient temperatures as shown in Fig. 55.

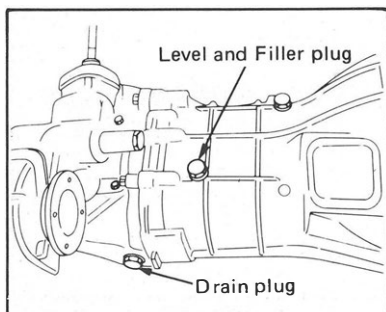


Fig. 54

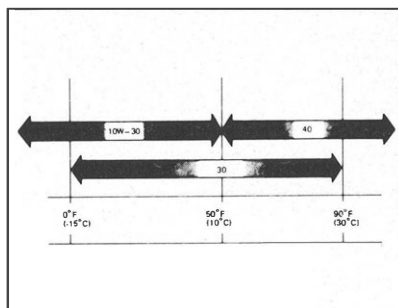


Fig. 55

CLUTCH

The clutch pedal free travel should be checked every 12 months or 20,000 km. The clutch pedal free play is normal if it is about 22 mm (0.87 in). Lubricate the clutch pedal bushing every 12 months or 20,000 km with water resistant EP chassis lubricant.

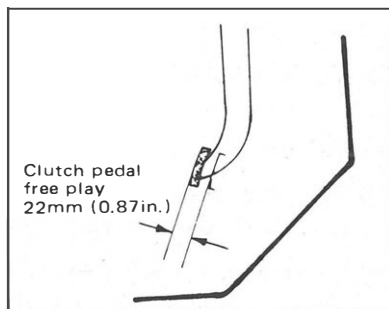


Fig. 56

REAR AXLE

Replace lubricant at first 10,000 km. Every 10,000 km or 4 months, whichever occurs first, check lubricant level and add lubricant. Fill to level of filler plug hole, if necessary. Use GL-5 Gear Lubricant of viscosity shown in Fig. 58.

Replace lubricant every 40,000 km. If vehicle is operated in exceptionally heavy work or at continuous high speeds, the lubricant should be changed every 20,000 km. It may be necessary to change lubricant more often if vehicle is used off road in dusty areas.

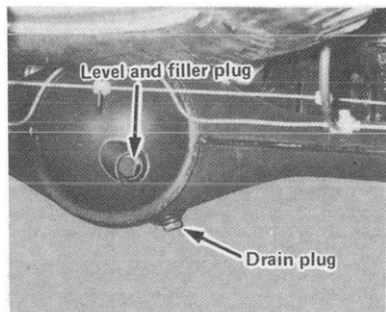


Fig. 57

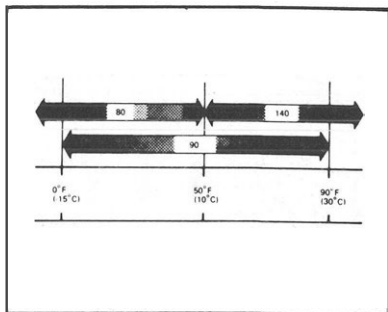


Fig. 58

PROPELLER SHAFT

Check propeller shaft flange bolts for proper torque (25Nm/18 ft-lbs).

WHEEL BEARINGS

Front and Rear

NOTE: Use wheel bearing lubricant NLGI No. 2 or No. 3 or equivalent. This is a premium high melting point lubricant.

Remove the front wheel hub to lubricate the bearings. To repack rear wheel bearings, proceed as follows: Remove rear axle shaft and bearing holder, wipe clean all traces of used grease and then apply new grease.

The bearings should be thoroughly cleaned before repacking with grease. Front and rear wheel bearings should be lubricated every 40,000 km.

CAUTION: "Long fibre" type greases should not be used on roller bearing front and rear wheels.

Replace the oil seal when you remove hub.

BRAKE MASTER CYLINDER

Every 10,000 km or 4 months, whichever occurs first, check master cylinder fluid level. If the fluid is low in the reservoir, it should be filled to the level mark on the reservoir with recommended Hydraulic Brake Fluid.

If the brake master cylinder with level indicator is equipped, the periodic fluid level check is not necessary.

When the brake indicator light on the instrument panel turns on while driving (the key in "ON" position), the fluid reservoir should be filled to the level mark on the reservoir with recommended Hydraulic Brake Fluid.

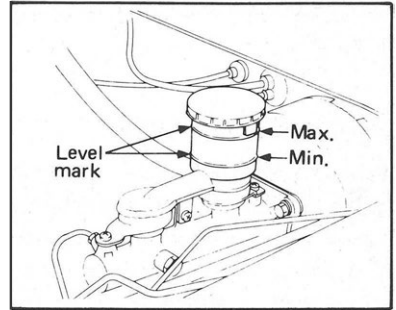


Fig. 59

BRAKE PEDAL

The brake pedal travel should be checked every 12 months or 20,000 km. The standard brake pedal free play is about 7 ~ 10 mm (0.3 ~ 0.4 in) when engine stopped.

The brake pedal effective travel is normal if a clearance of about 95 mm (3.7 in) is maintained between the pedal and floor when the brake pedal is depressed all the way down. (See Fig. 60.)

If the brake pedal effective travel or the brake action is abnormal, have your GMH dealer or distributor check the brake system at your earliest convenience. Lubricate the brake pedal bushing every 12 months or 20,000 km with water resistant EP chassis lubricant.

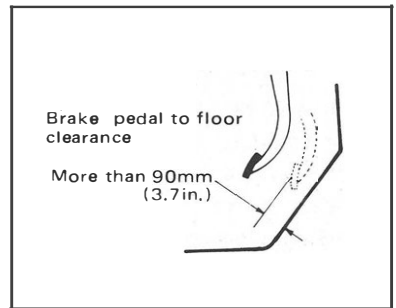


Fig. 60

BRAKE AND CLUTCH PEDAL SPRINGS

Lubricate brake and clutch pedal springs every 20,000 km or 12 months with chassis lubricant.

PARKING BRAKE

Every 10,000 km or 4 months whichever occurs first, clean and lubricate all parking brake linkage with water resistant EP chassis lubricant.

Check to be sure that the rear wheels are locked when the parking lever is pulled up. The parking brake lever travel is normal if it is between 13 ~ 14 notches when pulled all the way up. Check any play on actuator lever.

STEERING

The steering gear is factory-filled with steering gear lubricant. Check lubricant every 20,000 km or 12 months, whichever occurs first. Change the lubricant every 60,000 km. Use GL5 Gear Lubricant of viscosity shown in Fig. 58.

NOTE: Do not use EP Chassis Lube to lubricate the gear. DO NOT OVER-FILL the gear housing.

STEERING LINKAGE AND SUSPENSION

Maintain correct front end alignment to provide easy steering, longer tyre life, and driving stability.

Check control arm bushings and ball joints for wear.

Lubricate tie rods, relay rods, idler arm, upper control arms, and ball joints at fittings with water resistant EP chassis lubricant every 10,000 km or 4 months, whichever occurs first.

Keep spring to axle U bolts and shackle bolts properly tightened (See specifications for torque recommendation).

HOOD LATCH AND HOOD HINGE

Every 10,000 km lubricate hood latch assembly and hood hinge assembly as follows:

1. Wipe off any accumulation of dirt or contamination on latch parts.
2. Apply lubricant to hood latch pin and cam.
3. Apply light engine oil to all pivot points in release mechanism.
4. Lubricate hood hinges.
5. Make hood hinge and latch mechanism functional. Check to assure the assembly is working correctly.

BODY LUBRICATION

Normal use of a truck causes metal-to-metal movement at certain points in the cab or body. Noise, wear and improper operation at these points will result when a protective film of lubricant is not provided.

For exposed surfaces, such as door checks, door lock bolts, lock striker plates, dovetail bumper wedges, etc., apply a thin film of light engine oil.

Where oil holes are provided in body parts a dripless oil can be safely used, but any lubricant should be used sparingly, and after application all excess should be carefully wiped off.

The seat adjusters and seat tracks, sometimes overlooked, should be lubricated with water resistant EP Chassis lubricant.

There are other points on bodies which may occasionally require lubrication and which are difficult to service. Window regulators and controls are confined in the space between the upholstery and the outside door panel. Turn up the trim without removing it completely as it is bonded at the upper section. Door weatherstrips and rubber hood bumpers should be lightly coated with a rubber lubricant.

CHASSIS

Lubricate front suspension, steering linkage and propeller shaft. Grease fittings are located on the tie-rods, relay rods, ball joints and universal joints.

UNDERBODY MAINTENANCE

The effects of salt and other corrosive materials used for ice and snow removal and dust control can result in accelerated rusting and deterioration of underbody components such as brake and fuel lines, frame, underbody floor pan, exhaust system, brackets, parking brake cables, etc. These corrosive effects, however, can be reduced by periodic flushing of the underbody with plain water. In geographic areas having a heavy concentration of such corrosive materials, it is recommended that the complete underbody be inspected and flushed at least once each year, preferably after a winter's exposure. Particular attention should be given to cleaning out underbody members where dirt and other foreign materials may have collected.

TYRES

The factory installed tyres on your truck are selected to provide the best all round tyre performance for all normal operation.

Only those tyres of the size shown in the Tyre Inflation Table on the following page are recommended for use on your vehicle. Use of any other size of tyre may seriously affect ride, handling, ground clearance, tyre clearance, and speedometer calibration. To

achieve best all round vehicle handling performance, belted tyres and bias ply tyres should not be mixed on the same truck. Because of possible adverse effects on vehicle handling, do not mix radial ply tyres with other type tyres on the same vehicle.

NOTE: Refer to the recommended tyre inflation pressures on label attached to the rear face of the driver's door.

TYRE TRACTION

A decrease in driving, cornering, and braking traction occurs when water, snow, ice, gravel, or other material is on the road surface. Driving practices and truck speed should be adjusted to the road conditions.

When driving on wet or slushy roads, it is possible for a wedge of water to build up between the tyre and road surface. This phenomenon, known as hydroplaning, may cause partial or complete loss of traction, which adversely affects vehicle control and stopping ability. To reduce the possibility of traction loss, the following precautions should be observed.

1. Slow down during rainstorms or when roads are slushy.
2. Slow down if road has standing water or puddles.
3. Replace tyres when tread depth becomes 1.6 mm (1/16").
4. Keep tyres properly inflated.

TYRE ROTATION

The rotation of truck tyres will minimise tyre trouble and produce longer tyre life. With rotation, accelerated and irregular tyre wear on any one particular tyre will be spread out over the entire set, and replacement frequency will be reduced. Tyre wear may also contribute to such trouble as poor handling and shimmy.

A rotation sequence that moves the front tyres to the rear is a general recommendation. (See Fig. 61 & 62.) Due to different loading conditions on the wheels, new tyres which are run in on the front wheels usually produce the greatest overall tyre life. To equalise wear it is recommended that the tyres be rotated every 10,000 km. Upon rotation, tyre pressure must be adjusted (front and rear) in accordance with the recommendations for inflation pressure.

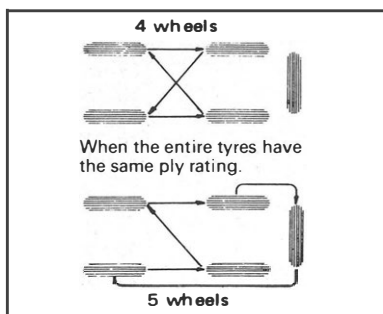


Fig. 61

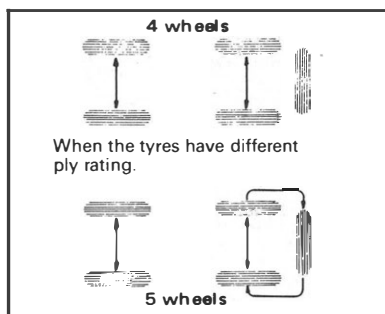


Fig. 62

INFLATION PRESSURE

Standard inflation pressures for tyres are listed below.

The use of improper tyre inflation pressures can affect tyre life and load carrying capacity, and may affect vehicle handling. Inflation pressures should be checked at least once a month (and preferably more often) to ensure that the right amount of air is contained in the tyres. With regard to tyre life, too little air pressure allows abnormal deflation of the tyre causing excessive operating temperatures, while too much air pressure prevents normal deflection, making the cord body more vulnerable to road impacts.

Use of the optional reduced inflation pressure shown in the "Tyre Inflation Table" is allowable only when the vehicle is unloaded (i.e. carrying no cargo).

When operating at loads greater than the optional reduced load, the inflation pressure must be increased to the standard inflation for full rated loads.

WHEEL NUT-TORQUES

On a new vehicle or after the wheel has been changed, the wheel nut torque must be checked at 1,000 km and every 4 months or 10,000 km whichever occurs first.

Torque: 88Nm (65 ft. lbs.).

TYRE INFLATION CHART

kPa

MODEL	TYRE	FRONT		REAR		Psi Pounds/ Sq. in	Kilo Pascals (approx.)
		Up to 2 Pass. + 250 kg	Up to Maximum Load	Up to 2 Pass. + 250 kg	Up to Maximum Load		
KB26	6.00-14-8 LT	AXLE LOAD ^{kg}	850	800	1500	15	103
		HIGHWAY	200 kPa	260 kPa	425 kPa	16	110
		ROUGH ROAD MUD, SAND	180 kPa	180 kPa	425 kPa	17	117
	185R14-8 LT	AXLE LOAD ^{kg}	850	800	1500	18	124
		HIGHWAY	180 kPa	220 kPa	450 kPa	19	130
		ROUGH ROAD MUD, SAND	180 kPa	180 kPa	400 kPa	20	137
KBA41	6.50-14-8 LT (SNOW)	AXLE LOAD ^{kg}	850	800	1500	25	172
		HIGHWAY	180 kPa	220 kPa	425 kPa	30	206
		ROUGH ROAD MUD, SAND	180 kPa	180 kPa	400 kPa	35	241
	6.50-14-8 LT (SNOW)	AXLE LOAD ^{kg}	850	800	1500	40	275
		HIGHWAY	180 kPa	220 kPa	425 kPa	45	310
		ROUGH ROAD MUD, SAND	180 kPa	180 kPa	375 kPa	50	344
						55	379
						60	413
						65	448
						70	482

- NOTE: 1. Tyre inflation pressure may increase as much as 50 kPa (6 psi) when hot: after vehicle has been driven 15 km or at speeds of more than 100 km/h.
2. In case of 4 x 2 models, 6.50-14-8 tyres marked with * should be used on the rear wheels only.

PARTICULAR ITEMS FOR 4 x 4 MODELS

Most lubrication recommendations and procedures for 4 wheel drive-equipped vehicles are the same as for corresponding components of conventional drive vehicles. In addition, the following items require lubrication at the intervals mentioned.

Front Propeller Shaft

Lubricate sliding yoke with water resistant EP chassis lubricant and universal joints with MoS₂ contained chassis lubricant every 12 months or 20,000 km. Every 4 months or 10,000 km, check propeller shaft flange-to-pinion bolts for proper torque of 25 Nm (18 ft. lbs.).

Front Axle

Replace lubricant at first 10,000 km and every 40,000 km thereafter. If vehicle is operated in exceptionally heavy work or at continuous high speeds, the lubricant should be changed every 20,000 km. It may be necessary to change lubricant more often if vehicle is used off road in dusty areas.

Every 10,000 km or 4 months, whichever occurs first, check lubricant level and add lubricant if necessary. Fill to level of filler plug hole. Use GL-5 Gear Lubricant of viscosity shown in Fig. 55. (Refer to Rear Axle.)

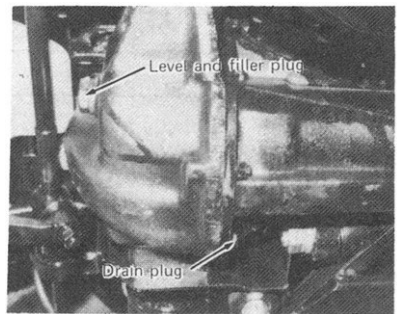


Fig. 63

Transmission with Transfer Case

Replace oil at first 10,000 km and every 40,000 km thereafter. Every 10,000 km or 4 months, whichever occurs first, check at operating temperature and fill as necessary to level of filler plug hole. Use engine oil of the correct oil viscosity for existing ambient temperatures as shown in Fig. 52. (Refer to Manual Transmission.)

Free Wheeling Hub

Clean and lubricate free wheeling hub at the same time the front wheel bearing is serviced. Use wheel bearing lubricant NLGI No. 2 or No. 3 or equivalent.

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Katherine Street

Recommended Lubricants

In order to obtain maximum performance and longest service life from your Holden Rodeo KB, it is very important to use lubricants selected according to the chart. The lubrication intervals in the maintenance schedule and application of new car warranty are based on the use of recommended lubricants as given in this chart which will serve as a guide for selecting lubricants of proper brand name.

Lubrication	Type of Lubricant
Diesel Engine	Diesel Engine Oil CC or CD Grade to GMH HN1455 Specification
Petrol Engine	SE Grade Engine Oil to GMH HN1455 Specification. See page 00 for Grades.
Injection Pump Governor (Diesel Engine)	Vacuum Cylinder Oil to GMH HN1746 Specification
Rear Axle Steering Box Front Axle (4 × 4 model)	Gear Oil GL5 grade to GMH HN1386 or HN1187 Specification
Wheel Bearings	Wheel bearing or Multipurpose Grease to GMH HN1227 Specification
Brake and Clutch Pedal Pivots, Park Brake Linkages and Guides, Sliding Yoke, etc.	Multipurpose Grease to GMH 1147 Specification
Universal Joints	MOS ₂ contained Type Grease to GMH HN1416 specification
Hydraulic Brake and Clutch System	Hydraulic Brake fluid to GMH 4653M, Type 450 Specification
Engine Cooling System	Permanent Anti-Freeze Type (Ethylene Glycol) to GMH 1899M Specification
Chassis	Water Resistant EP Type Chassis Lubricant to GMH HN 1271 Specification

Maintenance Schedule

In order to maintain your Holden Rodeo KB light-duty truck always in optimum operating condition and to promote driving safety, periodic inspection and maintenance should be performed regularly. Proper care, inspection and maintenance will combine to help you obtain maximum performance, operating economy and service life from your Holden Rodeo KB light-duty truck. It is therefore, recommended that the periodic inspection and maintenance be performed according to the periodic maintenance schedule given below. Have your GMH dealer perform the work when your vehicle becomes due for periodic inspection and maintenance.

* Service more often during severe operating conditions as outlined in Service and Maintenance Section.

Model with Petrol Engine

When to Perform Service (months or kilometres, whichever occurs first)	Services
First 1,000 km	• Change engine oil and oil filter. • Check wheel nut tightening torque. • Adjust valve clearance. • Check manifold mounting nuts and cylinder head bolts tightening torque. • Inspect drive belt.
Every 5,000 km	• Change engine oil.*
First 10,000 km	• Change transmission lubricant. • Change rear axle lubricant. • Change transmission with transfer lubricant (4 × 4 Models) • Change front axle lubricant (4 × 4 Models)
Every 10,000 km	• Inspect drive belt. • Tyre rotation. • Replace oil filter.*
Every 4 months or 10,000 km	• Chassis lubrication. • Fluid or lubricant level check.

Model with Petrol Engine (cont.)

When to Perform Service (months or kilometres, whichever occurs first)	Services
Every 4 months or 10,000 km	• Check propeller shaft. • Check suspension and steering linkage. • Check tyres and wheels. • Check exhaust system. • Check and lubricate parking brake linkage. • Check any play on actuator lever. • Check brake line and hoses. • Owner safety check. • Inspect drive belt.
Every 20,000 km	• Adjust valve clearance. • Lubricate distributor shaft and cam. • Replace distributor point, condenser. • Replace spark plugs. • Replace fuel filter. • Check manifold mounting nuts and cylinder head bolts tightening torque.
Every 12 months or 20,000 km	• Check steering gearbox lubricant. • Check lighting system. • Check and lubricate accelerator control. • Drain radiator coolant, flush and refill system. • Check and lubricate brake and clutch pedal. • Inspect service brake and Parking brake. • Under body maintenance. • Check and lubricate front propeller shaft (4 × 4 Models).
Every 40,000 km	• Change transmission lubricant. • Change transmission with transfer lubricant (4 × 4 Models). • Change rear axle lubricant.* • Change front axle lubricant* (4 × 4 Models). • Clean and repack wheel bearings. • Replace air cleaner element.*
Every 60,000 km	• Change steering gear lubricant.
Every 2 years	• Replace deceleration sensing valve.

Model with Diesel Engine

When to perform Service (months or kilometres, whichever occurs first)	Services
First 1,000 km	• Change engine oil and oil filter element. • Check wheel nut tightening torque. • Adjust valve clearance. • Check manifold mounting nuts and cylinder head bolts tightening torque.
Every 5,000 km	• Change engine oil.* • Drain fuel filter.
First 10,000 km	• Change transmission lubricant. • Change rear axle lubricant. • Change transmission with transfer lubricant. (4 × 4 Models) • Change front axle lubricant (4 × 4 Models).
Every 10,000 km	• Clean feed pump strainer. • Lubricate pneumatic governor chamber. • Check injection pressure and splaying condition. • Inspect drive belt. • Tyre rotation.
Every 4 months or 10,000 km	• Chassis lubrication. • Fluid or lubricant level check. • Check propeller shaft. • Check suspension and steering linkage. • Check tyres and wheels. • Check exhaust system. • Check brake line and hoses. • Owner safety check. • Check and lubricate parking brake linkage.
Every 15,000 km	• Replace oil filter element.* • Replace fuel filter assembly.

Model with Diesel Engine (cont.)

When to perform Service (months or kilometres, whichever occurs first)	Services
Every 12 months or 20,000 km	• Check steering gear box lubricant. • Check lighting system. • Check and lubricate accelerator control. • Drain radiator coolant, flush and refill system. • Check and lubricate brake and clutch pedal. • Inspect service brake and parking brake. • Under body maintenance. • Check and lubricate front propeller shaft. (4 × 4 Models).
Every 40,000 km	• Adjust valve clearance. • Check manifold mounting nuts and cylinder head bolts tightening torque. • Change transmission lubricant. • Change transmission with transfer lubricant (4 × 4 Models). • Change rear axle lubricant.* • Change front axle lubricant* (4 × 4 Models). • Clean and repack wheel bearings. • Replace air cleaner element.*
Every 60,000 km	• Change steering gear lubricant.
Every 2 years	• Replace deceleration sensing valve.

Specification and Service Station Information

GENERAL DATA

V.I.N. Plate Installed within the engine compartment.

Chassis Number— Stamped on the right side of the side member near the fourth cross member.

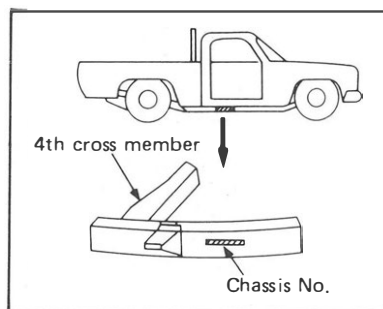


Fig. 64

Engine Number

- (Petrol) Stamped on the right part of the cylinder body near distributor.
- (Diesel) Stamped on the front part of the cylinder body.

Engine Tune-up Data Plate

- (Petrol) Bonnet inside panel.
- (Diesel) Air cleaner duct pipe.

Tyre Inflation Pressure Plate Rear face of the driver's door.

Colour Identification Number Plate Installed in the engine compartment.

SPECIFICATIONS AND TECHNICAL DATA

Engine

- (Petrol) G161Z, L4, 1584cc (96.7 cu. in.) piston displacement, 8.3 : 1 compression ratio.

Spark Plugs	: (AC44XLS or AC45XLS)
Spark Gap	: 0.75 mm (0.03 in.)
Oil Filter	: Full flow replaceable cartridge
Lubricating Method	: Pressure type
Crankcase Ventilation	: Closed type
Oil Capacity	: 5 litre
Ignition Timing	: BTDC 6 deg./700 rpm
Distributor Point Gap	: 0.45 mm (0.018 in.)

Idle speed	: 700 rpm
Valve clearance	: at cold Intake: 0.15 mm (0.006 in.) Exhaust: 0.25 mm (0.010 in.) at hot Intake: 0.20 mm (0.008 in.) Exhaust: 0.30 mm (0.012 in.)
Carburettor	: Nikki, Stromberg, 2 barrel downdraft
Fuel tank capacity	
(26 Models)	: 50 litre
KB41 Models	: 70 litres
Radiator type	: Tube and corrugated fin, pressure type
Coolant capacity	: 5.7 litre
Thermostat	: Wax pellet type, 82°C (180°F) open

(Diesel) C190, L4, 1951 cc (119 cu. in.) piston displacement, 20 : 1 compression ratio

Combustion Chamber type	: Swirl chamber
Oil Capacity	: 6.5 litre
Injection Timing	: BTDC 18°
Injection Pressure	: 120 kg/cm ² (1706 psi)
Idle speed	: 675 rpm
Valve clearance	: at cold Intake: 0.45 mm (0.017 in.) Exhaust: 0.45 mm (0.017 in.)
Fuel tank capacity	
(26 Models)	: 50 litre
KBD41 Model	: 70 litres
Radiator type	: Tube and corrugated fin, pressure type
Coolant capacity	: 7.2 litre
Thermostat	: Wax pellet type, 82°C (180°F) open

Clutch

Type	: Single dry disc with diaphragm spring.
Size	: 200 mm (7.9 in.) diameter.
Control	: Mechanical.

Transmission—4 speed, fully synchronised.

Ratio	: Model with G161Z or C190 engine.
Reverse	: 4.354 : 1
First	: 4.697 : 1
Second	: 2.841 : 1
Third	: 1.629 : 1
Fourth	: 1.000 : 1

Gear control: Floor shift (Standard)
Column shift (Optional)

Lubricant capacity: 1.25 litre

Transmission With Transfer

Case — 2 speed, fully synchronised transmission,
High-low manually switchable transfer (4 x 4
Models)

Transmisison Gear Ratio: Model with G161Z
or C190 engine

Reverse: 4.239:1

First : 4.697:1

Second: 2.841:1

Third : 1.629:1

Fourth : 1.000:1

Transfer Gear Ratio: High 1:1 Low 1.87:1

Lubricant Capacity: 2.5 litre

Front Suspension—Independent, torsion bar springs, with stabilizer bar, with
double-acting shock absorbers.

Rear Suspension —Semi-elliptic leaf spring, with double-acting shock absorbers.
U-bolt tightening torque: 49-58 Nm (35 ~ 45 ft. lbs.)

Front Axle —Fully floating (4 x 4 models)
Ratio 4.555:1 (Model with G161Z or C190 engine)
Lubricant Capacity: 1.2 litre

Rear Axle — Semi-floating
Ratio 4.555:1 (Model with G161Z or C190 engine)
Lubricant capacity: 1.3 litre

Steering — Recirculating ball and nut, Ratio 26 ~ 30:1
Lubricant capacity: 0.19 litre

Service Brake —Hydraulic disc in front, self-adjusting drum brake in rear with
vacuum servo
Front: Disc Rear: Leading Trailing

Parking Brake — Mechanical internal-expanding type acting on rear wheels.

Battery — NS70ZL 12 volts (—earth), 65 amp. hrs. (Model with diesel engine)
 N40L (40 amp. hrs.). (For model with petrol engine.)

TYRES AND WHEELS

KB26 KBD26	Tyres Wheel Rim	6.00 × 14 4.5J × 14	8 Ply Rating with Tube
KB41 KBD41	Tyres Wheel Rim	6.50 × 14 4.5J × 14	8 Ply Rating Mud & Snow Pattern with Tube
KB26W KBD26W	Tyres Wheel Rim	185R 14LT 50J × 14	8 Ply Rating Steel Radial with Tube

Wheel nut tightening torque — 88 Nm (65 ft. lbs.)

Lamp Bulbs

Used in	Quantity	Power
Headlights (type II)	2	50/40W
Turn signal lamps (front)	2	23W
Tail and stop lamps	2	23/8W
Turn signal lamps (rear)	2	23W
Licence plate lamp	1	5W
Side turn signal lamps	2	5W
Clearance lamps	2	8W
Dome lamp	1	7.5W
Back-up lamps	2	23W
Speedometer lamps, Combination meter lamp	3	3.4W
Oil pressure indicator lamp	1	3.4W
Parking brake warning lamp	1	3.4W
Charge indicator lamp	1	3.4W
Turn signal indicator lamps	2	3.4W
High beam indicator lamp	1	3.4W
Brake indicator lamp (if equipped)	1	3.4W
4 WD indicator lamp (4 x 4 only)	1	3.4W

Fuses

The fuse box is installed in position on the left side valance panel within the engine compartment. The fuse box contains six fuse cartridges in use and two spare fuse cartridges.

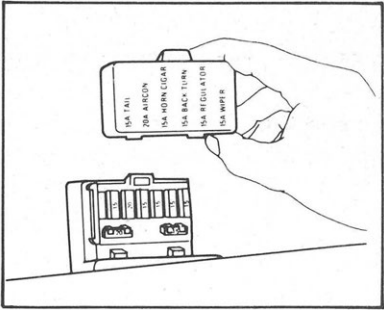


Fig. 65

Applicability	Amperes
Tail lamps, Instrument panel	15
Heater	20
Horn, cigar lighter	15
Back-up lamp, Turn signal lamps	15
Fuel pump (Petrol), Regulator	15
Wiper, Washer and Radio (optional)	15

NOTE: Do not use fuses of higher amperage than those recommended above.

SERVICE STATION INFORMATION

Refer to “Service and Maintenance” Section for Further Details

Petrol Cap

NOTE: If the petrol cap requires a replacement, only a genuine GMH replacement cap should be used. Failure to use the correct cap can result in a serious malfunction of the system. Correct replacement caps may be obtained from your GMH dealer.

Hood Release—To raise the engine hood, unlock the safety catch by pulling the release lever under the instrument panel (driver’s side), raise the hood all the way up and engage rod in head reinforcement so that it stays in position. Be sure support rod end engages in the hole on the head reinforcement.

To close, remove the support rod end from the hole on the hood reinforcement put the support rod back into the clip on the deflector panel. Then, lower the engine hood to a horizontal level and push down on the front until it is locked in position.

Engine Dip Stick—Located on side of engine block. Check oil level as the last operation in a fuel stop. Maintain between high and low level indicated in the dipstick.

Engine Oil Recommendation—Use SE oil for petrol engine, and CC or CD oil for diesel engine. The chart in the Service and Maintenance section will serve as a guide for selecting proper oil viscosity.

Tyre Inflation Pressures—Check at least monthly. Keep inflated to pressures shown in Tyre Inflation Table in the “Service and Maintenance” section.

Windshield Washer—Check reservoir fluid level regularly. Use a washer fluid of well known brand.

Battery—Check fluid level monthly. If the fluid level is low, add only colourless, odourless drinking water or distilled water to bring level to bottom of the vent well in filler opening.

SERVICE RECORD

This SERVICE RECORD is provided for your convenience in recording the service performed. It is suggested that the following table be used as a permanent reference to get yourself acquainted with every component of your Holden Rodeo KB and to maintain it in optimum operating condition not only during the warranty period but also through the life of the vehicle.

Kilometre

1000 km	Date: Odometer Reading: Authorised Dealer Signature	35000 km	Date: Odometer Reading: Authorised Dealer Signature
5000 km	Date: Odometer Reading: Authorised Dealer Signature	40000 km	Date: Odometer Reading: Authorised Dealer Signature
10000 km	Date: Odometer Reading: Authorised Dealer Signature	45000 km	Date: Odometer Reading: Authorised Dealer Signature
15000 km	Date: Odometer Reading: Authorised Dealer Signature	50000 km	Date: Odometer Reading: Authorised Dealer Signature
20000 km	Date: Odometer Reading: Authorised Dealer Signature	55000 km	Date: Odometer Reading: Authorised Dealer Signature
25000 km	Date: Odometer Reading: Authorised Dealer Signature	60000 km	Date: Odometer Reading: Authorised Dealer Signature
30000 km	Date: Odometer Reading: Authorised Dealer Signature	NOTE: The Maintenance schedule is contained in the Section "Service and Maintenance".	

Delivery Certificate

The dealer has completed the vehicle identification certificate, explained to the purchaser the terms and conditions of the General Motors-Holden's Sales Pty Ltd, New Vehicle Warranty and Notices and the contents of the Owner's Handbook. The dealer has informed the purchaser of his responsibility in respect of vehicle maintenance.

The dealer has demonstrated to the purchaser the operation of the vehicle and of all options and accessories.

The purchaser has been informed in writing of the fitting of any and all equipment or accessories not of GMH manufacture, and of any alterations or modifications which have been made to the vehicle and the effect on the GMH Sales New Vehicle Warranty of such fitting, alteration or modification.

Vehicle delivered in accordance with this delivery procedure.

Purchaser's Signature

Date

Delivered by: Signature

Date